

Dental

Abstracts

a selection of world dental literature

AMERICAN DENTAL ASSOCIATION

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A selection of world dental literature

Lon W. Morrey, D.D.S., editor

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1. *To present a selection of pertinent literature representative of all points of view within the profession;*
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3. *To supply enough data in each abstract and digest that the reader may determine whether he wishes to refer to the original article for more complete information.*

The abstracts are grouped in broad classifications. The specialist will learn from this periodical of work done in other fields as well as in his own. The general practitioner will be able to keep abreast of current knowledge in the various specialties. Unless otherwise indicated, the original article is in the language implied by the title of the magazine in which the article appeared.

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Plastic repair for the receding chin

John B. Erich. *Proc. Mayo Clin.* 34:419-422
Aug. 19, 1959

A receding chin not associated with retrusion of the mandible is a defect usually of congenital origin. In such patients, the teeth generally are in fairly normal occlusion. On occasion, such a deformity is the result of malocclusion, and although the teeth have been restored to normal articulation by orthodontic measures, some residual recession of the chin persists. A receding chin usually is a trivial defect, but it causes some persons so afflicted to be self-conscious.

This deformity can be corrected safely, effectively and easily, and one should not hesitate to urge a patient with this type of defect to have it corrected. Surgical repair of simple recession

Patient with receding chin. The teeth were essentially in normal occlusion. The chin was built up with cancellous bone chips from the crest of the ilium. a and b = preoperative views. c and d = postoperative views

of the chin is different from, and less involved than, the repair required for a receding chin associated with retrusion of the mandible and severe malocclusion.

A receding chin in a patient in whom the associated occlusion is essentially normal can be corrected most easily by use of cancellous bone chips taken from the crest of the ilium.

After the cancellous bone tissue has been obtained, the skin over the lower lip and chin is cleansed and draped with sterile towels. A small, horizontal incision about 2 cm. long is made just to the right of the chin along the lower border of

the mandible. Through this incision, the soft tissues over the symphysis of the mandible are separated from the underlying bone with dissecting scissors. This leaves a cavity over the anterior part of the mandible. The pieces of cancellous bone then are crushed by finger pressure into a pulp-like mass that is injected by means of a wide-nozzle syringe into the cavity prepared between the soft tissues of the lower lip and chin and the underlying symphysis. The soft mass of cancellous bone can be molded with finger pressure to give the chin the desired contour. The small incision in the skin is sutured with fine silk. Gauze is placed over the chin and attached with adhesive tape to hold the cancellous bone in the desired position.

Within ten days, the bone forms a solid fixed mass. Postoperative results (see illustration) are extremely satisfactory esthetically.

Mayo Clinic, Rochester, Minn.

Cephalometric measurements on adult patients with nonoperated cleft palates

Fernando Ortiz-Monasterio, Alfonso Serrano Rebeil, Manuel Vanderrama and Rolando Cruz *Plast. & Reconstr. Surg.* 24:53-61 July 1959

Surgery for cleft palate, performed in the first few months of the patient's life, and repeated and aggressive operative procedures, will produce underdeveloped maxillas. Four-fifths of the total facial growth takes place during the first five years of life. To establish a comparison in growth between normal and cleft maxillas, cephalometric measurements were performed on 19 adult patients with nonoperated cleft palate, seen in the Mexico City General Hospital. The average age of the patients was 27 years; 12 were men and 7 were women.

Although the number of patients was too low to have statistical value, interesting observations can be made. All 19 patients had normal maxillary growth; in fact, the average convexity angle indicated forward growth that was greater than normal. The increased maxillary protrusion can be explained by the lack of retention action effected by the normal muscle continuity of the lip. The Frankfort-mandibular angle was greater in the nonoperated cleft palate subjects than in nor-

mal subjects. The average facial angle was comparable to the normal angle, indicating an adequate craniofacial proportion.

The embryonic factor responsible for cleft palate does not interfere with maxillary growth. Growth defects of the middle third of the face are caused by early or repeated and aggressive surgery on patients with cleft palate. Probably a greater percentage of good results can be obtained if palate surgery is postponed until the patient's facial development is well advanced. The age is still compatible with a good program of speech therapy.

Mexico City General Hospital, Mexico City D.F., Mexico

Response of trigeminal neuralgia to 'decompression' of sensory root

W. James Gardner and Michael V. Miklos. *J.A.M.A.* 170:1773-1776 Aug. 8, 1959

Two series of 100 patients with trigeminal neuralgia were followed up after surgery involving decompression of the sensory root. In the Cleveland series, 67 patients had complete relief, eight had only mild recurrences and were happy with the result, and in 25 patients the initial operation failed to afford satisfactory or lasting relief. In the Copenhagen series, 57 patients had complete relief, in 15 patients the recurrence was so mild that the operation could be considered successful, and in 28 patients the operation failed to afford satisfactory or lasting relief. When the 200 patients in the two series are grouped, 62 per cent had complete relief, 11.5 per cent had partial relief, and in 26.5 per cent the operation failed.

The Cleveland patients were operated on by W. James Gardner, using the extradural approach of Frazier with the patient in the sitting position. After the dura had been opened anterior to the petrous ridge, the dural sheath over the sensory root was incised back through the petrosal sinus into the tentorium for a distance of 1 cm. posterior to the apex of the petrous portion of the temporal bone. The sensory root was freed from its dural sleeve, gently brushed with a cotton pledge, and irrigated with Ringer's solution. In the Copenhagen series, Taarnhøj used the intradural approach.

Neither surgical trauma to the nerve root nor incision of its dural sleeve is essential to the operation's success. The critical part of the operation appears to be neurolysis or manipulation of the sensory root at the point where it crosses the apex of the petrous bone.

The tendency to regard trigeminal neuralgia as a disease rather than a symptom has obscured thinking on the subject. Trigeminal neuralgia may constitute a symptom of multiple sclerosis, of basilar impression, or of a tumor located either in the middle or posterior cranial fossa. "Idiopathic" trigeminal neuralgia may be relieved by a gentle manipulation of the sensory root via either a middle or a posterior fossa approach. The only portion of the trigeminal sensory system that is common to both the middle and the posterior cranial fossae is the sensory root. The cause of trigeminal neuralgia may be localized to the posterior root of the fifth cranial nerve.

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Ohio

Study of tissue response to polyvinyl resin sponge implants in the jaws of dogs

William J. Dresser and Henry B. Clark, Jr.
J. Oral Surg., Anesth. & Hosp. D. Serv. 17:6:3-13
Nov. 1959

The prosthodontist's success sometimes is limited because the patient has severely resorbed alveolar ridges. Numerous foreign implant materials have been tested, but none has been entirely satisfactory.

A study was undertaken to observe the reaction of living tissue in dogs to implants of polyvinyl sponge (Ivalon) and to determine the suitability of this material for implantation in human jaws. Nine polyvinyl resin sponge implants were embedded in medullary mandibular bone (inlays) and seven were placed over cortical maxillary bone (onlays). All were covered by mucous membrane and periosteum. Implants were excised for biopsy after they had been in place for intervals ranging from 4 to 28 weeks.

Four inlay implants and five onlays were maintained in a healthy state for the entire period of observation. The remainder failed either because of infection or loss of covering epithe-

lium. Microscopic examination of those implants which retained mucosal coverage until the time of biopsy revealed the following:

1. A minimal foreign body reaction was observed in sponges which had been in place four weeks.

2. Implants older than four weeks were surrounded and infiltrated with fibrous connective tissue, and there was no evidence of foreign body reaction.

3. Two biopsy specimens taken after 28 weeks showed that the implants were surrounded and infiltrated by immature osseous tissue.

The following conclusions were drawn:

1. Polyvinyl resin sponge is compatible with surrounding tissues in the jaws of dogs, provided that infection does not supervene and that intact mucosal covering is maintained.

2. The end result of implantation within medullary bone is essentially the same as with placement over cortical bone.

3. Application of this technic to human subjects for the purpose of building up alveolar ridges is not justified, because of the high percentage of failures and the minimal osteogenetic potential demonstrated.

4. The use of polyvinyl sponge in situations in which a sterile field may be provided and in which early production of bone is not essential is not contraindicated by the results of this study.

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Minn.*

Cartilage implantation in the periodontium: its applicability to oral surgical procedures

Paul Zurbuchen, A. J. Held and Mario Spirgi.
Rev. mens. suisse odont. 69:703-726 Aug. 1959

Autotransplantations and homeotransplantations of cartilage into tissue affected by foci of infection have been frequently attempted in experimental animals. In most instances the implanted cartilage appeared to be insufficiently replaced by newly formed osseous tissue, and it was impossible to induce the necessary osteogenic activity in host tissues. The reported results, therefore, were inconsistent and often unsatisfactory.

In 67 patients with periapical, periodontal and alveolar foci of infection, implants of lyophilic

cartilage were inserted directly into the involved tissues.

Within 3 to 12 months, none of the implants showed the presence of infectious processes such as edema, abscess or fistula. There were no symptoms of tissue intolerance to the implant whether in the form of allergy or involuntary expulsion of the inserted cartilage. Although the mechanism of action of the implant or of reaction to the implant is unknown, it was demonstrated that the implant disappeared gradually after being replaced by newly formed osseous or osteoid tissue which subsequently became calcified.

Because the present limitations in both the number of cases reported and the length of the follow-up periods preclude the establishing of any definite conclusion as to the ultimate fate of the inserted cartilage implants, conclusive results will have to wait for the insertion of cartilage implants into the involved tissues of a far larger series of patients. This applies particularly to the newly formed alveolar crests in edentulous patients.

The absence of any clinical evidence of foreign-body reaction within the host tissues, however, seems to indicate a definite pattern of host acceptance. It can be assumed that after further clinical and roentgenographic studies of cartilage implants inserted for longer periods, cartilage implants will have a definite application to various oral surgical procedures.

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Neurinoma of the trigeminal nerve

H. Kreyenbühl. *Bul. Schweiz. Akad. med. Wiss.*
15:89-94 April-June 1959

The diagnosis: neurinoma or neuroma frequently strikes anxiety and fear into the minds of patients and their relatives. It is advisable, therefore, to explain that tumors growing in and from a nerve are not always lethal and that, in fact, patients with nerve tumors have a better outlook than those with abdominal or pulmonary tumors. Many nerve tumors—about half—are benign and surgically removable, whereas benign tumors in any other

cavity of the body are less common. The techniques of anesthesia and neurosurgery are now so well developed that the operation performed on a nerve tumor carries only a 10 per cent surgical risk.

The typical symptoms of a trigeminal neurinoma consist of disturbances of sensibility and extreme pain in the entire area of distribution of the fifth cranial nerve, especially along the mandibular division where paresthesia occurs, and along the ophthalmic division where an abducens oculi impairment causes double vision. Occasionally the characteristic symptoms of trigeminal neurinoma are accompanied by a gradually increasing dysacusis or bradyacusis which often leads to the erroneous diagnosis of an acoustic nerve tumor. The trigeminal neurinoma, however, does not involve the acoustic nerve directly, and can be roentgenographically demonstrated by the destruction of the sheath of the dura mater of the middle cranial fossa and of mastoid air cells.

The surgical management of trigeminal neurinoma consists of midline incision and craniectomy, biopsy of the tumor and removal of sufficient material to relieve the ventricular block. The dura mater should be left exposed for decompression. Roentgenotherapy of the entire region involved should be initiated at the tenth day after surgery.

Patients are always solicitous of the surgical wound, especially after head surgery, and the wound usually will be well healed and the sutures removed before the patient leaves the hospital. No special home care after surgical enucleation and roentgenotherapy of a trigeminal neurinoma is required. The head may be washed or shampooed three weeks after the operation without danger of injuring the incision. The hair usually grows to normal length in men in about three months and in women within six months.

If the head suture line breaks down and discharges serosanguineous material postoperatively, the chances are that there occurred a local infection. In such an instance, the wound should be reopened and appropriate doses of an antibiotic administered. The edges of the incision usually will close within a short time.

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Fractures

**Craniofacial osteosynthesis
in treatment of fractures of the upper jaw**

Slawtscho Michailoff Davidoff.
Deut.Zahn Mund Kieferh. 31:66-69
Aug.-Oct. 1959

Fractures of the upper jaw present problems of reposition and stabilization which are more complicated and can cause greater deformity of the face than those of the lower jaw.

Fortunately, however, fractures of the upper jaw occur less frequently, and at the oral surgical clinic of the Dental Faculty of the University of Sofia, Bulgaria, the ratio has been one maxillary fracture to four mandibular fractures.

The fundamental principle of treatment of jaw fractures consists in reducing the fracture displacement to the normal anatomic and functional relationships. At the Sofia clinic, craniofacial osteosynthesis frequently is employed to obtain the essential immobilization of the fragments until union and primary consolidation by calcification is achieved.

The method consists of a surgical fastening of the fragments by sutures, rings, plates or splints. A specially constructed splint is inserted above the upper teeth which permits the thorough cleaning and preparation of the operative field, especially in the posterior region. Infiltration anesthesia in the region of the infratemporal fossa involves especially the maxillary division of the fifth cranial nerve. The most favorable injection site is the angle formed by the posterior edge of the zygomatic process and the anterior edge of the frontosphenoidal process. The injection is best performed by using a Kerger needle passing wire sutures. The needle should penetrate the infratemporal fossa along the tuberosities of the upper jaw, invading the mucous membrane of the floor of the mouth between the upper second and third molars.



Above: Injection site for infiltration anesthesia (basal anesthesia). A Kerger needle, passing wire sutures, penetrates the infratemporal fossa along the tuberosities of the upper jaw

Below: Extraoral plaster plate with the symmetrically positioned buttons



The visual end of the wire suture then is detached from the needle and attached to the splint, and the needle, after topical application of a strong iodine tincture, is withdrawn. The end of the wire suture which projects over the anterior edge of the zygomatic arch is passed to a hole situated in the center of a plate made of plaster of paris. In this plate are two button-shaped elevations, symmetrically positioned, which serve to wind up the wire sutures. Beneath the plaster plate, sheets of surgical gauze are placed to prevent injury to the facial skin.

In instances of bilateral fractures, the procedure is repeated at the other side.

After conservative debridement and surgical cleansing of the wounds, nonvital macerated tissues are judiciously excised. At first the osseous fragments usually are mobile and can be aligned by the wire sutures which serve as guides.

The primary surgical phase of treatment in emergencies thereby can be expedited. The more complicated treatment should be carried out as soon as the patient appears to be sufficiently recovered to tolerate the necessary interventions. Complete accurate reduction and secure immobilization of osseous fragment, elimination of foreign bodies, nonvital bone particles and fractured teeth; control of postoperative infection and primary surgical (plastic) repair of the soft tissues of the face and the oral cavity are accomplished after craniofacial osteosynthesis has proved successful. The time of treatment for this phase sometimes runs from two to four weeks, the time being directly proportional to the degree of loss of substance and wound infection.

The third phase of treatment is the reconstruction period. In instances of severe injuries, plastic soft tissue surgery is indicated involving bone and tissue grafts, facial repair and prosthodontic service, followed by individual readjustment therapy.

In using craniofacial osteosynthesis to treat fractures of the upper jaw, the oral surgeon must combine common sense, experience and knowledge with ingenuity, so that comparatively simple fractures do not develop into rather seriously complicated affairs, which happens when the basic principles of treatment are violated.

Everyone, either specialist or general practitioner, must have a thorough knowledge of the various aspects of fractures of the upper jaw; the

specialist because he must treat such injuries, and the general practitioner because he should be in a position to evaluate whether the treatment in a specific instance is within his capability or should be referred to an oral surgeon.

Ruski 29, Sofia, Bulgaria

Extractions

Luminescent elevator

G. Martin. *D.Echo* 29:172-173 Nov. 1959

In the majority of instances in which the use of elevators is indicated, the field of operation is difficult to approach and can be observed only when lamps or mirrors (extraoral or intraoral) are employed. These appliances, however, frequently impede instrumentation.

The recently developed luminescent elevator was designed to overcome or, at least, to reduce these difficulties. The instrument consists of a straight shank elevator with a hollow blade 4 mm. wide, a luminescent mirror and a retrospective bulb attached to the end of the recess at the elevator's tip. This instrument permits application without loss of time and provides a clear field of vision. It also can be used for resection of the jaw, removal of cysts, enucleation of tumors and for other surgical interventions at sites which are difficult to illuminate properly.

The luminescent elevator is economical in use because it can be operated independently from the power supply system of the dental office by a Pertrix 3 volt cell battery which is obtainable almost everywhere.

The sterilization of the instrument after use is comparatively simple. The surgical instrument has to be separated from the luminescent unit (bulb and battery). In order of preference and reliability, the recommended sterilization methods are free steam under pressure, autoclaving, prolonged dry heat and hot oils. Chemical solutions such as formaldehyde or mercury preparations do not sterilize this instrument completely.

Tuttlingen, Württemberg, Germany

Comparative investigation of three iontophoresis apparatuses

H. Nossek. *Deut. Stomat.* 9:528-534 June 1959

Hydroxide iontophoresis provides the endodontist and the general practitioner with an effective technic for conservative root canal treatment. Its basic principle consists of introducing hydroxyl ions into the root canal and the adjacent tissues by electric currents.

The source of the electricity required by a modern iontophoresis apparatus usually is the alternating current system of the community; direct (continuous) currents are seldom used, mainly for safety reasons.

In root canal treatment of average patients, a current intensity of 5 milliamperes usually is sufficient; in patients who are extremely resistant to the effect of electric currents, the voltage may be increased up to 70 volts.

The most frequently used iontophoresis apparatus in endodontic practice in the East German Democratic Republic is "TuR Rs 5," produced by the Transformator and Roentgen Works in Dresden. This apparatus (Fig. 1) contains a switchboard which permits exact control of the electric doses therapeutically applied, approximately to

12 constant ohms. The apparatus, however, has no milliammeter, and therefore the degree of susceptibility or insusceptibility of individual patients can not be measured exactly but only be estimated. The apparatus permits a controlled slow increase or decrease of the intensity of the current and prevents the undesirable effects of stimuli produced by electrolysis or faradization. There are no known contraindications to the use of this apparatus for iontophoresis in root canal treatment; in certain instances, however, it will be advisable to administer more milliamperes per minute than can be exactly determined.

Another iontophoresis apparatus is the Bernard type, produced by La Physiotechnic in Paris, France, (Fig. 2), which also liberates hydroxyl ions producing alkalinity in the periapical region and inhibiting the growth of bacteria and favoring bone recalcification. The apparatus may be used also for local analgesia often required in endodontic practice. French dentists, using the Bernard iontophoresis apparatus and technic, reported that they have treated patients from 8 to 70 years old, among them pregnant women.

The third iontophoresis apparatus investigated was Iontophor Supra, produced by Mela Inc. in

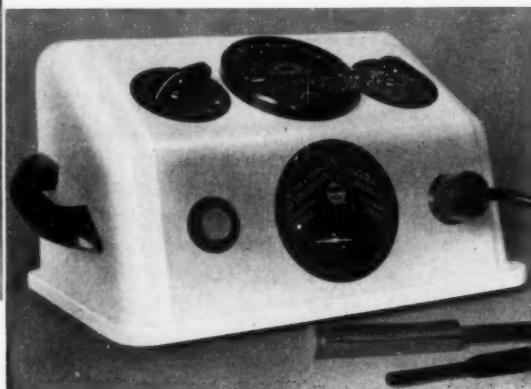


Figure 1 (Left) "TuR Rs 5" iontophoresis apparatus

Figure 2 (Right) "Bernard" iontophoresis apparatus

Munich, Germany. This apparatus combines the advantages of the other two products by containing a milliammeter, an ohmmeter and a dosage-controlling instrument measuring milliamperes by minutes. Using this iontophoresis apparatus permits local anesthesia during endodontic treatment, automatic current control and complete calculation of individual resistance to electric currents.

All three iontophoresis apparatuses, investigated at the Dental Clinic of the Medical Academy in Dresden, produced adequate debridement and sterilization of the root canals in an easier way than obtained by the use of other endodontic technics. Iontophoresis obtained rapid bone regeneration even in patients with severe systemic diseases, independently of which of the three apparatuses had been used. The bacteriostatic properties of the induced hydroxyl ions proved to be superior to that of various drugs routinely used in root canal therapy, and are, therefore, sufficient to sterilize the root canal in one session.

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Kri-1 for root fillings

A. J. Laws. *New Zealand D.J.*
55:131-133 July 1959

Kri-1 is a material which will hasten regeneration of bone at the apex of a pulpless tooth. Kri-1 is iodoform powder in a vehicle consisting of a mixture of parachlorophenol, camphor and menthol, which forms a thick, yellow paste with a pH of 7.

At the patient's first visit, all the necrotic contents of the pulp canals are removed, and the canals reamed. Between visits, parachlorophenol is used as a dressing, but on the first occasion a cotton pellet soaked in it is placed in the pulp chamber. This will allow for relief of pressure should there be an acute exacerbation of the periapical condition. A gutta-percha plug is sealed with zinc oxide-eugenol.

The second and third appointments are used for the removal of any solidified exudate on the canal walls, and for irrigation. Paper points impregnated with parachlorophenol then are sealed in the canals. Cultures, though helpful, usually are not taken if this technic is used; it is safe to assume that by the fourth appointment the tooth root is ready to be filled if it is clinically symptomless.

A gutta-percha point is selected which can be wedged in the apical portion of the root canal. The adaptation of the point to the canal is confirmed by roentgenogram. The gutta-percha point is marked so that on reinsertion it can be replaced to exactly the same depth. The gutta-percha point is removed and its apical quarter cut off for later use.

As much Kri-1 as possible is worked into the canal and through the apex by a spiral root-canal filler. Rarely is this procedure accompanied by pain. The apical portion of the gutta-percha point is inserted, the larger portion being used to push it in place. The larger portion is removed and the excess Kri-1 is cleaned out with cotton wool soaked in alcohol; the cotton wool should be wrapped on a broach.

The canal is dried with alcohol and warm air. The remainder of the canal is filled in the usual manner, with the larger portion of the gutta-percha point wiped clean of Kri-1, and the usual root-canal sealer or chloropercha used. By this method, the canal is sealed completely. Roentgenograms should be taken immediately after root filling, and again from 10 to 15 days later. The results over a period of five years, obtained by Bennett at the Royal Dental Hospital, London, show that if all, or nearly all, of the Kri-1 paste is resorbed in this period, complete bone deposition is assured within 18 months. The regular use of Kri-1 by British dental practitioners under the National Health Scheme indicates its economical and practical worth.

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**Sponge biopsy in instances
of oral tumors**

A. Bolla and U. Dusi. *Panminerva Medica*
1:39-41 May 1959

The difficulties encountered in making an early diagnosis of oral tumors are well-known. The usually available methods are roentgenography, stratigraphy, cytologic examination of the saliva and biopsy. Only biopsy can demonstrate the presence of oral tumors at an early stage.

Recent statistical studies indicate that biopsy is positive only in 75 per cent of instances of oral tumors, and that biopsies performed at the dental office are frequently dangerous to the patients.

For some times a simple and innocuous method of biopsy has been used at the Dental Institute of the University of Verona, Italy. Cytohistologic material is obtained by using a sponge, a procedure which can easily be performed by a dentist.

After the neoplastic or presumably neoplastic zone has been localized, a piece of hemostatic sponge is introduced with a forceps. The instrument remains for about one minute in a region which previously has been incised to promote moderate hemorrhage. The sponge collects traces of oral secretions and fragments of tissue, and the collected material then is prepared for histologic and pathologic studies.

The specimens obtained by sponge biopsy usually reveal a specific concentration of cells which in histologic preparations appear grouped, well preserved and can be stained by selective methods.

Sponge biopsy has been used in 25 patients with suspected oral tumors; in 20 patients the suspected diagnosis was definitely confirmed by needle biopsy, in the other 5 patients by surgical and postmortem findings.

Sponge biopsy is contraindicated in instances

in which the suspected region cannot be reached directly by the forceps carrying the sponge. The diagnosis of such inaccessible oral tumors must be based on roentgenographic studies and on the examination of the material obtained by usual technics.

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Italy*

**Radiosurgical treatment of primary
malignant tumors of the base of the tongue**

F. Brunetti. *Minerva chir.* 14:207-212
Feb. 28, 1959

Primary malignant tumors of the base of the tongue were present in 62 of 1,438 cancer patients who were treated at the clinic of the University of Turin, Italy, between 1936 and 1958.

Of these 62 tumors of the base of the tongue, 24 were spindle cell carcinomas, 18 were basal cell carcinomas, 10 were reticulosarcomas and 10 were adenomatous carcinomas. The ages of patients with primary malignant tumors of the base of the tongue were between 50 and 70 years.

At the time of the patients' admission, the primary lesions usually were localized at the base of the tongue; later, however, they involved the other adjacent structures such as the epiglottis, pharynx, palatine tonsils or the entire body of the tongue.

During the first period (from 1936 to 1949), of 24 patients with localized primary malignant tumors of the base of the tongue, 16 patients were treated by roentgenotherapy alone, four patients by radium implantation preceded by complete immobilization of the tongue (Sorensen's method), and four patients by electrosurgical excision and median pharyngotomy.

During the second period (from 1950 to 1953), roentgenotherapy was applied in the treatment of all patients with primary malignant tumors of the base of the tongue whether or not involvement of adjacent areas occurred. Radium implantation through the oral cavity, preceded by immobilization of the tongue (Sorensen's method) was carried out in three patients, and median pharyngotomy, followed by electrosurgical resection, was performed in two patients.

During the third period (from 1954 to 1958),

roentgenotherapy was the only procedure used in patients with primary malignant tumors of the base of the tongue whether or not involvement of the adjacent areas occurred.

In many instances, roentgenotherapy was preceded by unilateral or bilateral exeresis of lymph nodes.

The method consisted in administering radiation in a total dose of 6,000 r of either radioactive cobalt (Co^{60}) or roentgen rays. Recently the patients with primary malignant tumors of the base of the tongue were treated under general anesthesia by performing lateral buccopharyngotomy and exeresis of lymph nodes, followed by radium implantation under direct vision. This method permitted an accurate evaluation of the extent in width and in depth of the neoplasm.

Of the 22 patients available for follow-up examinations during the past eight years, death occurred in three patients in whom the tumors had spread to the glossopharyngeal region, in one patient in whom the tumor involved the entire body of the tongue, and in one patient who underwent lateral buccopharyngotomy. The survival rate of the other patients, however, is too undetermined to warrant any interpretation at the present time.

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Occurrence of certain cancer forms in gas-plant workers

A. Bruusgaard. *Tskr.norske Laegefor.* 79:755-756 June 15, 1959

The tumor forms investigated were possibly caused by occupational conditions in the gasworks and occurred mainly in the respiratory tract, the oral cavity and the urinary tract.

Autopsies performed on 125 gas-plant workers who died of malignancy revealed 12 instances of malignant tumors in the respiratory tract, 5 instances of primary tumors of the bladder and 3 instances of malignant tumors of the esophagus; 21 malignant tumors were in the maxillofacial region involving mainly the oral cavity.

The number of malignant tumors in the respiratory tract was higher than had been expected, as was the percentage of oral cancers.

The possible occupational cause of malignancy

in these regions is assumed to depend, at least in part, on the abundant smoke associated with the manufacture and refining of gas and of gaseous products containing tar and pitch, which are known to be carcinogenic agents. Malignant tumors in the oral cavity and the respiratory tract were found to be especially common in the so-called retort-house workers.

Inkognitogt 26, Oslo, Norway

Malignant disease of the salivary glands: a follow-up survey

Frank D. Lathrop. *Surg.Clin.N.Am.* 39:605-619 June 1959

Of 101 patients with malignant tumors of the salivary glands, treated at the Lahey Clinic in the 15 year period from 1942 through 1956, the lesions were situated in the parotid gland in 78 patients, in the submaxillary gland in 16, in the sublingual glands in 2, and in 5 patients the lesions arose in accessory salivary gland tissue located in the lip, cheek, tongue or hard palate.

Seventy-one patients had follow-up studies of five years or longer; 46 of these patients are alive, 6 with evidence of persistent neoplasms or metastases. The five year survival rate is 65 per cent. Twenty-five of the patients are dead, five of unrelated disease and without recurrence of the malignant tumor.

Of 32 patients followed up for ten years or more, 17 are alive, 2 with persistent malignant disease.

Fifty-eight patients had had no previous treatment; 43 patients had received prior treatment and exhibited recurrence of the tumors. The malignant neoplasm recurred after treatment at the Lahey Clinic in 31 patients, a recurrence rate of 31 per cent for all tumors in this series.

Surgical excision was the principal method employed in this series. In 65 patients this was the initial form of treatment; 40 of the patients had primary tumors and 25 had recurrent tumors. Nineteen of the 40 patients treated for primary tumor are alive and free of disease, 7 are dead, and recurrences developed in 14 (35 per cent). The 25 patients with recurrent malignant tumors, in whom the initial treatment consisted of surgical excision only, did not fare as well. Only 6 are

alive without recurrence, 3 are dead, and recurrences developed in 16 (64 per cent) of the group.

Surgical excision combined with roentgenotherapy was utilized in 46 patients; 25 of these patients are alive (3 with persistent tumors or metastatic changes), and 21 are dead. The results suggest that combined surgical and radiation therapy may offer a patient with malignant tumor of the salivary glands a better opportunity for cure than when surgical or radiation therapy is used alone.

Radiation therapy alone was used to treat seven patients in this series, of whom six exhibited recurrent tumors. Three of the seven patients are alive without recurrence; two are dead of the disease for which they had received radiation therapy; one patient who experienced a recurrence of the neoplasm received further radiation therapy and is now alive and free of malignancy five years after completion of therapy. The remaining patient died of a papillary adenocarcinoma of the thyroid gland not related to the adenocarcinoma of the parotid gland for which she had received treatment originally.

Lahey Clinic, 605 Commonwealth Avenue, Boston, Mass.

An evaluation of snuff and tobacco in the production of mouth cancer

Erle E. Peacock and Bob W. Brawley.

Plast. & Reconstr. Surg. 23:628-635 June 1959

Clinicians have loosely associated epidermoid carcinoma of the oral cavity and prolonged use of snuff and chewing tobacco without reliable data pointing to a specific carcinogen in unburned tobacco. Such an impression is based on reports that 60 to 75 per cent of patients with mouth cancer are chronic users of snuff and tobacco and that in countries where betel nut chewing is an extensive habit, an unusually high incidence of mouth cancer exists. These are only clinical impressions, and are unsupported by successful isolation of the supposed carcinogenic substances, or by experi-

mental work directed towards the production of oral cancer in animals.

In the present experiments, the authors have applied commercial snuff and tobacco directly to the oral mucosa of hamsters during a major portion of their life span. The hamster's pouch was selected because of its relatively large expanse of oral mucous membrane which could be disconnected from the general oral cavity to permit long-term application of snuff and tobacco. The oral opening of the pouch was circumcised with fine scissors and the mucosa dissected from the masseter muscle and subcutaneous cheek tissue for a distance of about 1 cm. The material to be implanted was inserted until the pouch was comfortably full. The opening of the sac was doubly ligated and transplanted beneath the masseter muscle. Snuff or tobacco were placed in the left side, and in about half the animals a control substance, such as sand or chewing gum, was placed in the control pouch.

Of 21 hamsters with pouches in which snuff had been implanted, and who survived more than 13 months, none developed a neoplasm of any type in either the snuff or control pouch. Of 21 hamsters with pouches in which tobacco had been implanted, and who survived more than 12 months, none developed a neoplasm.

One hamster had a known carcinogen (3-methylcholanthrene) implanted in a pouch for 12 months and developed a highly anaplastic tumor which appeared to be a sarcoma.

Any carcinogenic agent present in snuff and tobacco, therefore, is presumed to be weaker than 3-methylcholanthrene and probably too weak to elicit neoplastic changes in the oral mucosa of hamsters during a normal life span.

More comprehensive and difficult analytic surveys of the general human population, to compare users and nonusers of snuff and tobacco, are necessary before it is certain that a statistically significant cause and effect relation exists between the chronic use of tobacco and snuff and the development of mouth cancer.

University of North Carolina School of Medicine, Chapel Hill, N.C.

Nitrous oxide hypalgesia in trained subjects

F. P. Haugen, W. J. Coppock and H. C. Berquist.
Anesthesiology 20:321-324 May-June 1959

Anesthesia
and analgesia

**A self-sealing hypodermic syringe
for dental anesthesia**

Hermann Kreuscher. *Anaesthetist, Berlin*
8:327-328 Nov. 1959

A new self-sealing hypodermic syringe is used routinely at the dental and oral surgical clinics of the Diaconia Hospital in Freiburg/Breisgau, Germany.

The syringe consists of a double-barreled needle and two cannulas which are closed at their ends. The unilateral openings are brought to congruity by rotation of the inner barrel. A slight rotation turns the syringe into the "off" position after injection, thereby avoiding damage to the tissue.

The hypodermic syringe may be sterilized in an autoclave permitting penetration of saturated steam under pressure, or of dry heat, but not by using chemical solutions.

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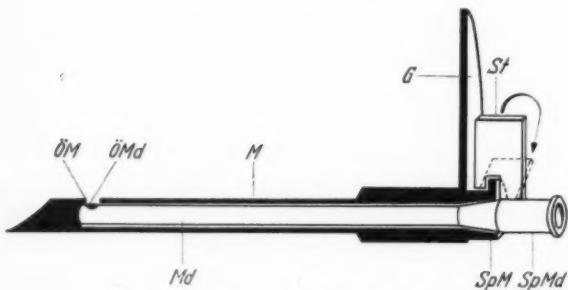


Diagram of the new self-sealing hypodermic syringe. M = cannula and cover. G = handle and plate. SpM = injection attachment. ÖM = lateral opening. St = rotating barrel. Md = second cannula, also with lateral opening (ÖMd) and injection attachment (SpMd)

A condition of hypalgesia exists in the "twilight" zone between consciousness and unconsciousness when general anesthetics are administered. The agent most commonly used to produce the state of diminished sensitivity to pain is nitrous oxide. This gas has widespread use in dentistry, obstetrics and general surgery because of its analgesic properties.

A study was made of the effects of various concentrations of nitrous oxide on the thresholds for electrical stimuli applied to filled teeth in nine men. A small wire electrode was cemented in contact with the amalgam or gold restoration in a tooth—usually an upper bicuspid. The subject's left hand was in contact with a signal key which lit a small lamp above an instrument panel in the adjoining room. The subject was asked to signal by pressing the key when he felt a sensation in his tooth, and to continue to hold the key down as long as he felt the sensation. The subjects for the tests on the just-tolerable-pain thresholds were asked, in addition, to signal by rapidly pressing the key when the sensation became as intense as they were willing to experience.

Nitrous oxide-oxygen mixtures were delivered to the subjects in concentrations of 25, 30, 40 and 50 per cent of nitrous oxide.

The absolute threshold was the point at which the stimulus was just felt, and the avoidance threshold was at an intensity where just-tolerable-pain was noted.

The two thresholds were found to run parallel courses with no indication that the painful quality of the stimulus disappeared without a concomitant change in the absolute threshold.

An unexpected result of the testing was the influence of learning on the effects of nitrous oxide. With one exception, no more than five test runs were required before the subject learned to discriminate the stimulus from the general state of mental confusion resulting from the inhalation of the gas. The factor of learning, together with the close correlation between the absolute threshold and the avoidance threshold led to the conclusion that an interpretation of the term "nitrous oxide

analgesia" must be elastic enough to include the part played by confusion. It can be assumed from these tests that nitrous oxide does not produce a state of analgesia comparable to that observed in patients to whom a moderate but effective dose of morphine has been administered.

University of Oregon Medical School, Portland, Ore.

An electronic aid for hypnotic induction: a preliminary report

William S. Kroger and Sidney A. Schneider.
Internat. J. Clin. & Exper. Hypnosis 7:93-98
April 1959

The Synchronizer, or BWS, is a portable electronic instrument designed to induce various levels of hypnosis by subliminal and photic stimulation of the brain waves. The present model has been field tested for one year and the results can now be predicted. The BWS has proved its worth in medicine, dentistry and obstetrics.

The human brain produces pulses or waves of electricity in three general ranges: (1) alpha range, about 10 cycles per second; (2) beta range, about 30 cycles per second, and (3) delta range, about 4 cycles per second. The BWS is calibrated and covers all three ranges; it can be set on the exact frequency of the brain waves. No apparatus or wires are connected to the patient, and the response can be achieved as readily with groups as with individuals.

Between August 1957 and August 1958 the Synchronizer was tested on about 2,500 patients, some individually and some in small and large groups. Within five minutes of the start of induction, almost 80 per cent of the patients reached either the level of light hypnosis or deep hypnosis. About twice as many patients reached the level of deep hypnosis as light hypnosis within five minutes. Improved technic should shorten the induction time to three minutes.

When the experiments began, verbalizations were used to facilitate induction. Later, it was necessary only to inform the patient what to expect. The instructions were as follows: "Concentrate on the center of the instrument. When your eyes become tired and heavy, as they will, just let them close and feel yourself going deeper

and deeper into a relaxed state." The photic stimulation produced by the instrument induced hypnosis if and when an expectant attitude was created.

The instrument saves time and effort for both therapist and patient. The patient assumes a comfortable position, sitting or reclining, facing the general direction of the instrument. The distance between patient and machine is not important. Instructions are given, the instrument is turned on and set to the approximate brain wave frequency. After the subject is hypnotized, suggestions can be given with the instrument on or off. If left on, suggestions can be given to maintain the hypnotic state. The instrument weighs five pounds.

Chicago Medical School, Chicago, Ill.

The effectiveness of some antiseptics on the oral mucous membrane

R. A. Cawson and I. Corson. *Brit. D.J.*
106:208-211 March 17, 1959

The preparation of the mucous membrane with an antiseptic before injection of a local anesthetic is an accepted procedure in dentistry. In practice, the dentist swabs the area to be injected, puts down the swab and takes up the syringe with little delay between the actions, so that the antiseptic usually has only from 15 to 30 seconds to act. A limited study was made to test the effectiveness under clinical conditions of various antiseptics.

An area of buccal mucous membrane was rubbed over with a sterile swab ("first swab"), the antiseptic was applied, and after 15 to 30 seconds another swab ("second swab") was taken. Direct cultures were made from each swab. The first swab showed the microorganisms present in the selected area before treatment. The second swab was moistened with sterile water or broth before use, since some of the antiseptics had a drying effect on the mucous membrane and a dry surface cannot be sampled satisfactorily with a dry swab. Six antiseptics were tested in 470 patients. Complete inhibition of growth of oral bacteria on blood agar was the standard by which the antiseptics were assessed.

Both tincture of iodine and aqueous iodine solution (iodine 2.0 per cent, potassium iodide 2.0

per cent, plus distilled water) were highly effective in their powers of disinfection. Two per cent Hibitane (chlorhexidine 2.0 per cent, plus alcohol) also proved a good disinfectant for use on the oral mucous membrane. Seventy per cent alcohol is virtually useless as an antiseptic on the mucous membrane; probably saliva has an inhibitory effect on alcohol. Relatively poor results also were obtained with Dettol (p-chloro-m-xenol 1.44 per cent) and Roccal (benzalkonium chloride 2 per cent). Metaphen (nitromersol) was the least effective of all the antiseptics tested, and it had no drying effect on the mucous membrane.

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Addiction, addicting drugs, and the anesthesiologist

Edward R. Bloomquist. *J.A.M.A.* 171:518-523
Oct. 3, 1959

Anesthesiologists have a close professional and, occasionally, personal interest in drug addiction. Anesthesiology is unique in that all patients benefiting from this service receive a combination of drugs which possess a high addiction potential. To administer these drugs intelligently, an extensive background in pharmacology, chemistry and physiology is required.

Patients addicted to narcotics pose a special problem to the anesthesiologist because they sometimes require unusually large doses of pre-medicants and anesthetics, manifest withdrawal symptoms while in the hospital, develop such complications as tetanus and hepatitis from previous infections, or act in devious ways to conceal or satisfy their habit.

Of known drug addicts, 60 per cent are between the ages of 21 and 30 years. Seventy-eight per cent are male. Diacetylmorphine (heroin) is the preferred drug among addicts outside the medical profession. Among heroin addicts, more than 90 per cent begin the treadmill with marijuana.

Before the addicted patient is treated, a complete history should be obtained.

Physical examination may reveal many of the telltale signs of drug addiction—pinpoint pupils, needle marks on the skin overlying accessible

veins, varying amounts of phlebitis, cellulitis, scarring and venous occlusion. Withdrawal symptoms—sneezing, anxiety, yawning, goose flesh, nausea and vomiting—also serve in diagnosis if withdrawal is imminent.

If the addiction is past history, the use of narcotics should be avoided if it is clinically permissible. If narcotics are required to control pain, they should be used in adequate doses. The patient must have a program tailored to his needs, and attenuation of the dosage must be attempted as soon as possible. If the patient is currently addicted, surgery, if possible, should be postponed until withdrawal is accomplished. If the patient is addicted and surgery cannot be postponed, narcotics should be reasonably administered to provide comfort before and after surgery.

When a member of the health professions decides to use potentially addicting drugs to relieve pain, he employs a sacred and marvelous right; he also assumes tremendous responsibilities. Of addicts admitted to the U.S. Public Health Service Hospital in Lexington, Ky., in 1957, 20 per cent were persons who became addicted while taking drugs for therapeutic purposes.

Meperidine is the preferred narcotic among addicted members of the medical profession. Easily acquired and simply administered, it produces a relaxation which relieves tension.

Within the professions, particularly among dentists and anesthesiologists, anesthetic gases remain an easily accessible pharmacologic escape for those who enjoy synthetic release, be it ever so brief, from tension and anxiety. Gas sniffers, like drug addicts, may be sporadic or chronic users. Nitrous oxide often is used sporadically because its effects quickly disappear. A case in point is that of a dentist who became perpetually late for his appointments because he closeted himself with his gas inhaler between patients' visits for a brief escape from reality.

Although addiction to anesthetic drugs is uncommon, the fact that it occurs suggests that everyone who uses these substances may find it advantageous to refrain from sampling them for any reason. Routinely handled drugs, including anesthetic gases, are an ever-present threat to susceptible persons.

1487 East Chevy Chase, Glendale 6, Calif.

Case reports

Hand-Schüller-Christian disease of oral origin

G. Verdura and C. E. Pini. *Panminerva Medica* 1:79-82 June 1959

Hand-Schüller-Christian disease (chronic idiopathic xanthomatosis) frequently begins with pathologic manifestations in the oral cavity. The initial oral symptoms (gingivitis, stomatitis and extreme tooth mobility) occur a long time before other local or systemic symptoms (disturbances of growth and development, exophthalmos, diabetes insipidus and defects in osseous tissues) are recognizable.

A three year old boy was examined at the dental clinic of the University of Milan, Italy. Extreme pain localized anteriorly to the lower dental arch was the main complaint. There was no evidence of tuberculosis, syphilis, neoplastic or neuropathologic changes. The patient's brother, a five year old boy, was apparently healthy.

About six months before admission to the clinic, the normally developed child had been examined by a dentist, who observed the presence of deep carious lesions in the upper and lower incisors, and of gingival lesions exhibiting necrosis and hemorrhage. The condition was diagnosed as stomatitis, and five deciduous incisors were extracted.

Later, inflammation of the gingivae occurred followed by extreme tooth mobility and spontaneous loss of several teeth. There were other oral symptoms such as continued suppuration, extreme halitosis and tumefaction of the gingival tissue which appeared to be covered by a substance consisting of dried blood and pus.

The course of the disease was afebrile, interrupted periodically by remittent elevation of temperature. There was a rapid decline in general health with severe and progressive anemia, adenomatosis and hematosplenomegaly.

Growth and development seemed to be stopped completely.

Roentgenographic examination revealed the presence of osteolytic changes in the bones, lacunae in the lower jaw exhibiting a pseudocystic pattern. Because of this defect, some of the lower teeth appeared in roentgenograms as if they were "hanging in the air."

The histologic picture of the gingivae showed granulomatous changes characteristic of Hand-Schüller-Christian disease.

The clinical pattern of the disease was completed six months after the onset of the oral manifestations with the occurrence of diabetes insipidus and cutaneous as well as pulmonary granulomatosis.

The clinical and histopathologic findings confirmed the diagnosis: Hand-Schüller-Christian disease with an atypical oral origin.

Drug treatment proved to be unsuccessful, and only a limited improvement was obtained by roentgenotherapy.

In all instances of oral necrotic lesions in young children exhibiting also extensive gingival hemorrhages, premature and spontaneous tooth losses, progressive periodontal disease associated with osteolytic trauma of the lower jaw (detectable only in roentgenograms), and with an otherwise obscure etiology, Hand-Schüller-Christian disease should be considered in the diagnosis.

Clinica Pediatrica, Via Commenda 9, Milan, Italy

Osteomyelitis of the tympanic bone after tooth extraction

J. Ďuriška. *Bratislavské Lekárske Listy* 39:45-49 Jan. 1959

Osteomyelitis of the tympanic bone with fistula formation and sequestration into the external auditory canal developed in a 33 year old dental patient. The suppurative osteomyelitis, obviously caused by trauma, occurred after extraction of a lower third molar under conduction anesthesia of the fifth cranial nerve.

Antibiotic therapy (penicillin and streptomycin), drainage and surgical elimination of the sequestra (without undue traumatization) resulted in complete recovery after 16 months. Post-

operatively, good general care consisting of bed rest, nutritious food, vitamin administration and blood transfusions hastened the recovery.

The fistula was treated by electrocoagulation and its epithelial lining and adjacent tissue were cauterized.

Otolaryngological Clinic of the University of Ružomberok, Czechoslovakia

**Psychoneurosis of dental origin:
report of case**

Sergio De Giovanni. *Rev.mens.suisse odont.* 69:530-534 June 1959

A 35 year old patient with periodontitis in the region of the upper first molar was seen at the Polyclinic of the Institute of Dental Medicine of the University of Geneva, Switzerland.

The patient, obviously under extreme mental stress, showed psychoneurotic behavior characterized by uncontrollable emotionalism involving subjective disturbances of the psychic, sensory, motor, vasomotor and visceral functions. He was unable to cooperate with the dentist and complained of sudden blindness, paroxysmal pain radiating from the upper jaw to the temporal process, and drowsiness.

Both periodontal treatment and extraction of the molar were postponed.

He was referred to the neurological and ophthalmic clinics of the university; various examinations did not reveal any organic disturbances. After eight months of psychopathological treatment, the patient again visited the dental clinic. Although the psychoneurotic symptoms were still present, the molar was extracted. The patient, however, fainted despite the fact that the extraction had been performed under local anesthesia. Recovering from the temporary suspension of consciousness, the patient claimed that he had regained sight in both eyes. Immediate medicoclinical and neurological examinations revealed that subjective symptoms had disappeared. The patient was cooperative and underwent periodontal treatment without further disturbances.

This unique condition may be interpreted as a psychoneurosis partially produced by an abnormal or hysterical fear of any dental procedure, and partially by an inability to cope with the pain

associated with the carious molar and the periodontal disease. Recovery obviously was promoted by surgical shock (tooth extraction).

Polyclinique de Stomatologie, Institut de Médecine Dentaire de l'Université de Genève, Switzerland

Gargoylism: report of case

C. Calandi and G. F. Vichi. *Riv.clin.pediatric.* 62:9-39 July 1959

Gargoylism, also known as lipochondrodystrophy, is a metabolic abnormality which affects the brain, the cranial bones, the oral cavity, the skeleton, and the internal organs. The disease appears in families, apparently being determined by an autosomal recessive gene.

The patient, a four year old boy, was admitted to the Pediatric Clinic of the University of Florence, Italy. The appearance of the patient was so striking that it permitted immediate diagnosis: lipochondrodystrophy. The head was slightly enlarged, dolichocephalic, with rather shallow orbits and protruding eyes and forehead. The bridge of the nose was depressed and the eyes widely spaced. The lips were thick and the tongue far too large for the mouth, interfering with breathing and mastication. The breathing was rather noisy because the oral cavity and the oropharynx were partially obstructed.

General growth was stunted, the neck and trunk were unusually short and some of the vertebrae malformed. The temporomandibular joint was ankylosed.

Mental development was retarded.

The parents stated that the initial symptoms of lipochondrodystrophy were observed one month after birth, but they were unable to give evidence of the occurrence of this disease in other members of their families.

Clinical and roentgenographic examinations revealed that the nerve cells were enlarged and contained inclusion material which, chemically analyzed, proved to be gangliosides similar to those found in the nerve cells of patients with amaurotic familial idiocy (Tay-Sachs disease), familial splenic anemia (Gaucher's disease) and lipoid histiocytosis (Niemann-Pick disease). There were fat-laden macrophages in the perivascular spaces,

and in the meninges both macrophages and an increase in fibrous tissue.

The disease followed a progressive course and had a fatal outcome. Because no treatment method is known which obtains improvement or cure, no attempt at therapy was made.

*Clinica Pediatrica dell'Università di Firenze,
Florence, Italy*

Recurrent oral ulcers

J.A.M.A. 171:495 Sept. 26, 1959

Q.—A 23 year old woman, who has one child, has a negative history except that she has had recurrent ulcers of the mouth since she was a child. If several ulcers are present, she may have a slight fever. Her grandmother, mother and two sisters have had oral ulcers intermittently throughout their lives. None of the male members of the family has had such lesions. The patient is otherwise in excellent health. The ulcers are shallow, tender and painful. They measure from 1 or 2 mm. to 1 or 2 cm. in their greatest diameter. Please discuss diagnosis and therapy.

A.—Diagnosis of recurrent aphthosis is based primarily on the appearance of the clinical lesions and the course of the disease. Exclusion of other ulcerative diseases of the mouth is important in substantiating the clinical impression. The cause of recurrent aphthous stomatitis is not known. A viral etiology has been postulated but has not been substantiated. Sensitivity to certain foods or drugs and emotional stress have been noted to precipitate these attacks. Chocolate, nuts and barbiturates may produce the reaction, which is often called erythema multiforme when produced by a drug.

Other conditions which produce ulcerations of the mouth, such as syphilis, moniliasis, ulceromembranous stomatitis and the so-called electrogalvanic ulcers, must be considered in the diagnosis. However, these conditions ordinarily do not produce recurrent ulcers.

Important in the care and treatment of recurrent aphthosis is maintenance of proper nutrition. Pain-relieving solutions can be administered orally prior to meals, and a soft diet followed. A tripeptenamine solution held in the mouth for 15

minutes before eating should suffice. Pyridoxine ointment and chlortetracycline mouth-wash have been advocated as topical therapy. Because of the postulated viral etiology, repeated smallpox vaccinations, poliomyelitis vaccinations, and the administration of gamma globulin have been advocated for prevention of further attacks. However, therapy in most instances is discouraging.

535 North Dearborn Street, Chicago 10, Ill.

Acute parenchymatous glossitis with gangrene of the tongue

Stanford Howard and M. D. Cremin. *Lancet*
No. 7099:410-411 Sept. 19, 1959

The condition here described appears to be unique in the annals of surgery. The patient, an edentulous woman 74 years old, complained of a pain which started above the angles of the jaw. The pain gradually moved up to the temporal regions on both sides. She experienced heavy sweating at night, so severe that she had to change her nightwear two or three times a night. After three weeks her throat became swollen and her tongue began to swell until it almost filled the entire oral cavity. The condition gradually worsened until, on a night six weeks from the onset, she suffered intense pain and felt she was choking.

The patient was in great distress; her temperature was 103°F., pulse 120, and she was suffering apprehension because of the difficulty in breathing. With a spatula it was possible to open the jaws about a third of an inch; this revealed a grossly enlarged tongue which almost completely filled the oral cavity and which was compressing the fauces and soft palate. The patient complained of great pain during the examination.

She was hospitalized immediately, and an urgent tracheotomy was planned. She was given 1 Gm. of streptomycin parenterally. Her breath had a faintly sweetish odor, not in the least offensive.

The surface of the tongue was covered with dry, heaped-up epithelium which could be scraped off easily; specimens were sent for bacteriological examination. The patient was given an injection of morphine.

The next day her condition was improved. Her temperature was down to 101°F., and some

salivation was noted. The tongue was less swollen, and the jaws could be opened more easily. Streptomycin therapy was continued. At the end of three days the condition appeared to be improving rapidly, but the edges of the tongue were beginning to thin out, and stringy, cobweblike, light brown appendages were hanging all round the edges of the anterior two-thirds of the tongue; microscopic examination showed only unidentifiable necrotic tissue. Salivation became excessive. The slow destruction of the tongue persisted. No attempt was made to dislodge any of the tongue's appendages lest uncontrollable hemorrhage be precipitated.

By the end of three weeks the whole anterior two-thirds of the tongue had disappeared as far back as the line bounded laterally by the circumvallate papillae, and in the midline by the foramen caecum. The patient's condition otherwise appeared normal and she was allowed to go home. One week later she was having difficulty in maintaining her lower dentures in position, without her tongue to depress them. A dentist designed a new denture which adhered more satisfactorily to the mandible and floor of the mouth; the new denture was more effective than the old one. Her phonation was good considering the amount of tongue lost. Labials were pronounced perfectly, the dentals less well; her main difficulty was with the liquids and sibilants; gutturals were normal.

Although the pathologic condition in this patient cannot be determined, it seems she had an acute infective thrombosis of both the deep or terminal lingual arteries and veins. That the posterior one-third of the tongue was not affected probably was because it derived its blood supply from the dorsal lingual arteries and the tonsillar branch of the facial artery. The only microorganism recoverable during the course of the disease was *Escherichia coli*; it is surprising that even when the gangrenous process was at its height there was no halitosis. The infection appears to have been blood-borne, since there was no history of a wound of the tongue.

Burnley, England

Chronic, diffuse, bilateral enlargement of the parotid glands

H. Spoendlin. *Deut.med.Wschr.* 84:1970-1975
Oct. 30, 1959

Two women, 49 and 50 years old, with chronic, diffuse, bilateral enlargement of the parotid glands, were treated at the Otorhinolaryngological Clinic of the University of Zurich, Switzerland.

In both instances, the pathologic changes in the parotid glands were sequelae of Sjögren's syndrome but Heerfordt's disease (uveoparotid fever), Mikulicz's disease and neurogenic, allergic and nutritional factors had to be considered in the differential diagnosis.

Sjögren's syndrome affects women mainly during and after the menopause and is characterized by dryness of the oral mucosa and recurrent enlargement of the parotid gland associated with a decrease in the salivary secretion and the development of keratoconjunctivitis sicca. In addition, there are arthritic-rheumatic changes, increased sedimentation rate, achlorhydria and various other disorders simulating the symptoms of collagen disease.

In both patients, histopathologic examinations revealed the presence of a massive round cell infiltration into both parotid glands with the appearance of myoepithelial islands and an almost complete disappearance of the normal glandular tissue.

Because no specific chemotherapeutic treatment of chronic, diffuse, bilateral enlargement of the parotid glands is known, roentgenotherapy was attempted but obtained only temporary relief.

Diagnostically, the appearance of chronic, diffuse enlargement of the parotid gland (whether unilateral or bilateral) should always be considered as a possible oral manifestation of a systemic disease; biopsy of the involved gland should be obtained immediately to secure the correct diagnosis.

Rämistrasse 100, Zurich, Switzerland



Fear of dental treatment in children

Jaroslav Kominek and Ladislav Srp.

Deut.zahnärztl.Zschr. 14:1616-1620 Nov. 1, 1959

All children dread the dental office, the dentist and any form of dental treatment, even if some of them (mainly the older children) are successful in hiding their fears. Many dentists and the majority of parents believe that most children are free from this specific phobia.

An investigation of the presence and the degree of fear of dental procedures was carried out at the pedodontic department of the Second Dental Clinic of the University of Prague, Czechoslovakia.

The rate of breathing and pulse, symptomatic for anxiety, were recorded by a polygraph which was attached to wrist and chest of the children during different stages of dental treatment.

In each experimental situation, groups of school children, consisting of at least 15 but usually 30, were examined. There was no psychologic preparation of the children prior to the tests; they were neither calmed down nor distracted by any outside stimuli or medications.

The results were as follows:

1. Ten seconds after the child was placed in the dental chair, the average frequency of the pulse rhythm showed an almost normal picture (Fig. 1).

2. Ten seconds after the dentist came near to the dental chair, a significant change in the pulse frequency took place (Fig. 2).

3. Ten seconds after cavity preparation started, a tremendous increase in the pulse frequency occurred, probably associated with the noise of the dental drill and not with pain sensations (Fig. 3).

Almost the same phenomena occurred in the acceleration of the breathing rhythm under similar situations.

Various methods are available to treat or at least to reduce fear of dental treatment in chil-

dren. The dentist, especially the pedodontist, may correct his own "chairside manners" when treating children who are obviously afraid. His behavior, voice, movement and instrument manipulation should be directed toward reassuring such children. He may also employ premedication.

The dentist should realize that weak and seemingly indifferent impulses may be caused by vegetative reactions to dental treatment and that the initial impulses, even if they are comparatively weak, may determine the child's resistance to further dental treatments.

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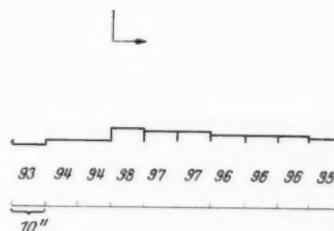


Figure 1 Average frequency of pulse 10 seconds after child had been placed in dental chair

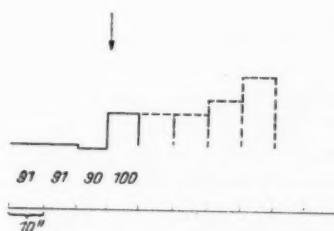


Figure 2 Changes in pulse frequency 10 seconds after dentist came near dental chair

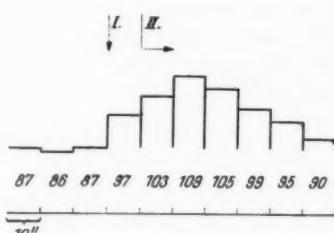


Figure 3 Increase in pulse frequency 10 seconds after beginning of cavity preparation

Dentin dimensions of primary teeth

Sumter S. Arnim and Millard P. Doyle.
J.Dent.Children 26:191-214 Sept. 1959

To determine the shortest distance from the dentinoenamel junction to the pulp at various levels in the tooth crown, approximately 7,500 measurements were made on 358 deciduous teeth. The data collected demonstrate so little variation in the measurements from tooth to tooth in groups of homologous teeth that the observations are useful clinically for planning cavity preparations. When this basic information is applied in operative dentistry, the dentist may excise enamel and dentin of deciduous teeth in such a manner that the pulp is safeguarded, dentin is conserved and the spatial attributes of the completed cavity best meet the mechanical requirements for a long-lasting restoration.

By using the dentinoenamel junction as a base line from which cavity preparations in dentin may be mapped and measured, the operator can plan precisely the direction and depth of the cuts in relation to the proximity of the pulp and surrounding enamel. The operation can be designed within the spatial limitations of the tissues involved so that a maximal amount of healthy dentin is preserved to conserve the pulp and strengthen the tooth. A minimal amount of tooth substance is excised to meet the mechanical requisites for adequate retention of the completed restorations.

In the study the teeth had been preserved in 10 per cent formaldehyde after extraction. They were then demineralized in weak acid, dehydrated in alcohol and cleared with xylene containing 3 per cent paraffin. The teeth became transparent, and the pulp horns and chambers could be observed easily. The teeth also acquired a leathery consistency which made them easy to hold. They were easily sectioned with a razor blade into thin slices.

Measurements were recorded from 25 or more teeth in each group—upper central incisors, lower central incisors, and so forth. The mean measurements are presented tabularly and are illustrated for each tooth group.

Analysis of the data points to the desirability of restorations for deciduous teeth that rely on an encircling design for retention and resistance. Although the average depth of dentin usually is about 1 mm. or more, the shortest distances reported herein from the pulp to the dentinoenamel junction, when coupled with the statistical evaluation of the data, reveal that deciduous incisors and first molars especially have insufficient dentin to provide a safety zone of 0.5 mm. when the usual cavity preparation for amalgam is made. In every instance, the distances from pulp horns to cusp tips were greater than to adjacent axial dentinal surfaces. Generally, there was more than 2.0 mm. of dentin occlusally and less than this laterally. The distal dentin usually was a little thicker mesiodistally than was the mesial dentin, especially in the cervical regions. The buccal and the lingual dentin were thicker than the mesial or the distal dentin. In the cervical region of the anterior teeth, the lingual dentin was thicker than the labial dentin.

More root resorption was found in anterior than in posterior teeth. The anterior teeth, with the exception of the upper lateral incisors, were abraded more than the posterior teeth. The upper central incisors and lower canines were abraded the most, and the upper second molars the least.

Dental students and dentists should dissect teeth, especially those with carious lesions, and study the spatial attributes of enamel and dentin in relation to the lesion, the pulp, the cutting instruments and restorative materials. Such study will lead to a higher standard of professional service and a more efficient operation.

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**Simultaneous occurrence
of certain muscle habits and malocclusion**

Egil Warrer. *Am.J.Orthodont.* 45:365-370
May 1959

At the dental clinic of the school in Vejlby-Risskov, Denmark, it appeared that a majority of patients with malocclusion had a typical dysfunction of the lip musculature, characterized chiefly by a distinct contraction of the mentalis muscle during deglutition, not connected with mastication or consumption of food. This dysfunction was rarely observed in patients with normal tooth position and normal occlusion.

To submit this clinical observation to closer study, all the children (exactly 100 children) of four school classes, all about 11 years old, were examined. While seated in the dentist's chair, each child was observed discreetly for a few minutes before the normal routine examination was begun. In addition to the few spontaneous deglutitions which occurred during the period of observation, each child was asked now and then to swallow saliva or a few drops of water which had been sprayed on the dorsum of the tongue beforehand. The function of the mentalis muscle was noted. The results of this inspection were considered in relation to the result of the dental examination and orthodontic diagnosis.

About 67 per cent of the patients with malocclusion showed a pronounced function of the mentalis muscle, whereas the muscle remained passive in 7 per cent of the patients with malocclusion.

With patients who had no malocclusion, the figures were almost reversed; 62 per cent had a passive mentalis muscle and 5 per cent had an active one. Of the 31 patients who showed active mentalis function, 90 per cent had malocclusion; conversely, 92 per cent of the 39 patients with a passive mentalis muscle had no malocclusion.

Although caution should be used in drawing conclusions from an examination founded on a technic so dependent on subjective observation, the tendency of the figures is so clear that one may be justified in attributing some value to them in support of the theory that there is a correlation between the occurrence of some instances of malocclusion and the observed dysfunction of the mentalis muscle during the first stages of the act of swallowing. It is not probable, however, that the dysfunction is limited to the musculature which can be observed in the patient's face.

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**Orthodontics and prevention
of periodontal disease**

Peter Bertzbach. *Med.Klin.* 54:1833-1834
Oct. 2, 1959

The increasing incidence of periodontal disease in patients requiring orthodontic treatment seems to indicate that measures to prevent the development or to decrease the incidence of periodontal disease fall not only within the field of periodontics but also in that of orthodontics.

Although the causative relationship between tooth irregularities and periodontal disease still is a matter of controversy in dental literature, the part that the orthodontist can play in prevention of the disease is significant. The fact that periodontosis seldom occurs in the cuspid and bicuspid regions indicates that mechanical forces should not be overemphasized as being essential factors in the development of the disease.

In improving the esthetic appearance and the occlusion, the orthodontist must avoid producing a condition which may promote periodontal disturbances.

Further research is required into the problem of the reflex control of masticatory function before any dogmatic judgment can be made concerning traumatic occlusion as a primary factor in the pathogenesis of periodontal disease. Because it is as yet not possible to increase sufficiently the resistance of periodontal tissue, all preventive and therapeutic procedures are important which eliminate or decrease successfully the unfavorable stimuli.

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Orthodontics in 1969

T. M. Gruber and Donn D. B. Chung.
Am.J.Orthodont. 45:655-681 Sept. 1959

Of 2,300 questionnaires sent to orthodontists in November 1958 by the American Association of Orthodontists, 1,325 were answered and returned. The questionnaire contained 70 questions relating to the future of orthodontics.

Only in the western states do orthodontists believe that in 1969 there will be fewer orthodontists per capita than there are today.

More than 65 per cent of the 1,325 orthodontists expressed the belief that universities should expand their graduate orthodontic training; about 39 per cent favor federal subsidies for teaching salaries. A majority of those responding said the American Association of Orthodontists should play a larger role in the training of future orthodontists.

Asked whether preceptorship was desirable, 636 (48.8 per cent) opposed preceptorship and 586 (44.9 per cent) favored it.

The sentiment for more short courses and seminars was overwhelming (86.4 per cent for and 8.9 per cent against).

Only in the Northeast did orthodontists favor more orthodontic training for the general practitioner to permit him to handle limited orthodontic problems. The over-all total was 554 in favor and 675 against. In the tallies, 289 favored more orthodontic procedures to be performed by the pedodontist, 478 favor his doing the same amount as he does now, 142 think he should do less, and 318 believe he should do none.

In the country as a whole, 44.7 per cent see the need for expanded public health facilities by 1969, 30.3 per cent would have the facilities continue "as is," and 16.2 per cent say there are too many public health facilities already.

More than two thirds of the respondents believe the federal government will play a larger role in orthodontics in 1969, and an even larger percentage do not favor this trend.

Only the West favors the California Curriculum II for training more orthodontists (this is a course of study in which students are trained in a combined undergraduate-graduate course).

Some 81.8 per cent of the respondents predict

an increase in the use of auxiliary personnel. A study of the answers indicates that most orthodontists approve of the hygienist cleaning teeth, cleaning the cement off bands, and removing loose bands and arch wires. Much support exists for impression taking and removing appliances, but fitting and cementing bands and placing arch wires are taboo.

The majority of respondents (58.2 per cent for, 32.5 per cent against) believe that more technicians should be trained in indirect appliance construction.

As a group, practicing orthodontists feel that an orthodontic internship for the recent graduate is desirable and would be beneficial to both the student and the preceptor; the majority, however, oppose making such a program compulsory.

The returns indicate that the orthodontists believe the chances are that bungalow offices and offices in the suburbs will be even more popular in 1969 than they are today.

By a ratio of five to one, orthodontists regard as desirable group practices with various medical and dental specialties represented. Independent group arrangements in which each man is responsible for his own practice also are considered ethical and desirable, and more such arrangements are predicted by 1969.

By a ratio of three to one, orthodontists assert that the advantages of partnerships and associations outweigh the disadvantages; by a ratio of eight to one, orthodontists predict that the trend will increase by 1969.

By a ratio of five to one, orthodontists state that the multibanded technic will be used routinely. Less than one in ten orthodontists believes that removable appliances will exert a strong influence on orthodontic philosophies in the United States by 1969.

Predictions as to the optimum size of the case load per dentist, with auxiliary personnel, in 1969 center around 125 to 200 cases. However, estimates ranged up to 750 cases, and more than 140 orthodontists estimated above 225 cases.

Almost 50 per cent of those responding said the four-week vacation time would be optimal in 1969. To the question as to whether fees would keep pace with the cost of living, 63.2 per cent said "yes" and 30.3 per cent said "no."

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Prosthetic dentistry

Dyslalia

Juan Beltrán Codina. *Rev.espan.estomat.*
7:217-242 May-June 1959

The treatment required to correct dyslalia, or impairment of pronunciation caused by abnormality of speech organs, may range from re-educative exercises to medical, prosthetic, surgical, or physiotherapeutic procedures. The task of the dentist is to evaluate and, if possible, correct the mechanism of articulation and the various interdependent factors that enter into phonation as a whole.

Re-educative exercises should be directed first to training the patient how to make voluntary and coordinated movements of the tongue, lips and palate. Later, the patient should practice the correct formation of the consonants and vowels, and finally he should learn to combine sounds properly in words and sentences. Psychotherapy may be needed to overcome not only psychic or mental defects, but inertia and physical and mental fatigue arising in the course of the exercises. Patients with speech disturbances, regardless of their age and the cause of the disturbance, whether it is purely physical or partly or wholly emotional or psychic in origin, should always be treated with understanding and patience, in agreeable, serene and tranquil surroundings. Auxiliary measures should include the use of physical procedures (hydrotherapy, diet, climate). The use of antispasmodics or modern synthetic preparations that counteract anxiety and tension, nerve tonics, and topical vasoconstrictors and anti-allergic drugs, may be highly beneficial and should be administered as indicated.

Surgical treatment is often essential when the underlying defect is a cleft palate or cleft lip, or when hearing is inadequate because of tonsillar hypertrophy or adenoids. For the best results, sur-

gical intervention in such instances should be followed by phonetic and kinetic reeducation of the kind already described.

Prosthetic treatment has a twofold purpose—preventive and curative. The early correction of dental and maxillary anomalies may effectively prevent the appearance of speech defects. Again, by replacing missing tissues in the mouth, prosthetic dentistry plays an extremely important role in the rehabilitation of speech, especially when some of the teeth must be removed in order to correct congenital defects of the hard and soft palates. The dentures for such patients must be designed and constructed with scrupulous precision to meet the phonetic requirements of pleasing speech.

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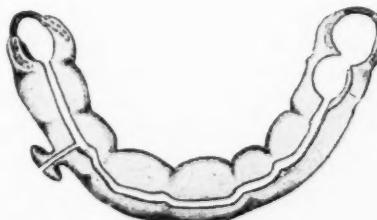
A simple acrylic splint

J. D. Palmer. *Brit.D.J.* 106:406 June 16, 1959

A simple acrylic splint (see illustration) has been used successfully in three patients with dislocated incisors in the maxilla or mandible.

An alginate impression and wax bite are taken, and a model cast. Use is made of the natural undercuts in the interdental spaces of the teeth for retention.

Clasp wire (1 mm. stainless steel) is used to make "hinges" distally on the splint, to enable the appliance to be fitted. The occlusal surface is left



free from acrylic resin so that there is no interference with the articulation. The splint is split labially, after processing, at a convenient site through a button shaped like a mushroom. Both inner faces of the button are trimmed, so that when the appliance is fitted some pressure is required to wire it together. This ensures a tight fit.

The splint can be produced easily and quickly. It is less bulky than most acrylic splints. The occlusion is not affected, the splint is easy to fit, and it can be removed and refitted as many times as necessary without difficulty. No cementing is required. The splint is inconspicuous if made in clear acrylic resin.

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Operative dentistry

The effects of abrasive agents on amalgam surface

J. R. Grundy. *D. Practitioner* 9:262-267
July-Aug. 1959

Although it is generally agreed that three or four abrasives with different qualities are required to produce a high polish on amalgam, considerable variation of opinion exists as to what are the best agents to use and in what order they should be applied.

A standard specimen of amalgam was subjected to a number of abrasive tests under standard conditions. The results made it possible to place the abrasive in an order of abrasiveness.

Carborundum stone produces such a rough surface that its use is contraindicated as a prelude to polishing. However, carborundum stone removes amalgam speedily, and sometimes is needed when gross modifications to the contour of an amalgam restoration are required.

A new finishing bur also removes amalgam efficiently, but leaves a very rough surface.

Pumice makes a rougher surface than does a worn finishing bur and its use would appear unnecessary for normal routine polishing. However, if a carborundum stone or new finishing bur has been used, pumice may be desirable as an intermediate abrasive before the final polish is attempted. Abrasives should not be applied with too great a difference in abrasive qualities between one abrasive and the next.

The irregular, wavelike mounds produced on amalgam by rubber cups contraindicate their use as a means of applying abrasive pastes.

Whitening and alcohol, applied with a bristle brush, result in a standard of polish high enough for clinical purposes. Because whitening by itself does not possess enough abrasive power to take an unpolished amalgam through to the final polished state, some other agent must be used to level the rough amalgam restoration sufficiently to enable the whitening to polish effectively. A worn finishing bur does this satisfactorily.

For speedy and efficient polishing of amalgam restorations, therefore, the following steps are recommended:

1. The restoration should be carved carefully at the time of filling, to make the later use of carborundum stones and new finishing burs unnecessary.
2. A finishing bur that has been well blunted is used to remove marginal edges, make slight adjustments to contour, and provide general smoothing.
3. The restoration should be polished with whitening and alcohol applied with a bristle brush.

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**A clinical evaluation
of an oxygenating agent:
preliminary report**

Alvin D. Senter. *Oral Surg., Oral Med. & Oral Path.* 12:320-324 March 1959

A new proprietary oxygenating agent, Amosan, has been distributed by the Knox Company to many dentists, together with claims regarding its efficacy as an aid in the management of periodontal diseases, including necrotizing ulcerative gingivitis, stomatitis, gingivitis, and so forth. This preliminary study was undertaken to evaluate the product.

The agent studied was sodium peroxyborate monohydrate 70 per cent, buffered with anhydrous sodium bitartrate 30 per cent and flavored with menthol and oil of peppermint. It is packaged in units of 1.7 Gm. Each patient was instructed to dissolve the contents of one package in about one tablespoonful of water and to use this as a mouth rinse for 90 seconds at a time. The agent was used three times a day, each time after brushing the teeth.

Two series of patients were observed. In one the labeled oxygenating agent was used. In the second series, the double blind technic was followed. The results, based on the subjective reactions of the patient and the clinical judgment of the investigator, were combined to give an overall impression of excellent, good, fair or none.

In the first series of patients, positive results were obtained in 19 of 23 instances of periodontitis; in three of three instances of necrotizing ulcerative gingivitis in from one to four days; in four of nine instances of gingivitis, and in none of two instances of chronic necrotizing gingivitis. Positive results were obtained in 71 per cent of the patients.

In the double blind study, positive results were obtained in 10 of 20 patients who received fla-

vored, buffered sodium bicarbonate, and in 22 of 28 patients who received the test agent. This study indicated that 50 per cent positive results could be expected with a bland mouth rinse.

Untoward reactions were reported in six (8 per cent) of the patients. Of these, five patients experienced a slight to moderate burning sensation without any observable pathologic symptoms. One patient reported irritation, and small ulcers were observed on the marginal gingivae. All six patients reported prompt disappearance of the periodontal symptoms on discontinuation of the rinse. No instances of allergy, bacterial or fungal overgrowth were observed.

On the basis of this preliminary study, the product is moderately effective as an adjuvant to periodontal therapy.

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Alcoholism and periodontal disease

Luise Iliewa Schiklwa. *Parodontal, Zürich*
13:67-75 July-Sept. 1959

The possible relationship between acute or chronic alcoholism and the incidence of periodontal disease was investigated at the Dental Clinic of the Chervenko Higher Institute of Medicine in Sofia, Bulgaria.

Of 107 Bulgarian men between 20 and 90 years old who had never consumed alcohol in any form, 34 (31.7 per cent) had periodontal disease.

Of 197 Bulgarian men between 20 and 90 years old who were registered by governmental agencies as known alcoholics, 189 (96 per cent) had periodontal disease.

Of 70 men and 80 women over 40 years old who had never consumed alcohol in any form and who had periodontosis, only 72 (48 per cent) had lost more than five teeth.

Of 70 men and 80 women over 40 years old who were registered by governmental agencies as known alcoholics and who had periodontosis, 126 (84 per cent) had lost more than five teeth.

Examination of the family history of all subjects who had never consumed alcohol in any form and who had periodontal disease, revealed that almost 80 per cent of their parents and

grandparents were (or had been) known alcoholics.

The results of the investigation, therefore, indicate that acute or chronic alcoholism may be considered as one of the main causative factors in the development of periodontal disease.

A similar result, confirming this conclusion, was obtained in experimental animals (white mice). The periodontal tissues of alcoholized mice soon showed signs of severe inflammation, whereas the periodontal tissues in nonalcoholized animals (control group) remained healthy.

The battle against alcoholism, therefore, also is a battle against periodontal disease.

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New experiences with vitamin E in periodontitis

E. E. Febbraro.

Rev. Gaucha odont. 7:25 Feb. 1959

Between 1954 and 1959, several patients with periodontitis and a spontaneous, transient but recurrent mobility of one or more teeth were observed. Trauma and inflammation were ruled out. This type of mobility often occurred in the obese, in patients with toxemia and in women who aborted without any apparent cause. All these patients excluded vegetables and fresh eggs from their diets.

The author believed that this type of mobility was a result of a metabolic disorder in which the periodontium was unable to store vitamin E. The treatment consisted of the administration of vitamin E by mouth for ten consecutive months, in daily doses of 200 mg. for three months, 100 mg. for three months and 50 mg. for four months. Fresh, uncooked eggs formed a part of the daily diet. The patients received instructions on how to practice careful, circular brushing of the gums without using any tooth paste. None of the patients who received this treatment was again bothered by mobility of the teeth. Oral administration of vitamin E gives satisfactory results. It makes the use of injections of synthetic vitamin E in the jugum alveolare unnecessary.

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Etiology of periodontal disease

K. Beyeler. *Schweiz. Mschr. Zahnhk.* 69:285-288 April 1959

The anatomic and physiologic condition of periodontal tissue can be altered pathologically by various factors which can be classified as (1) endogenous factors; (2) exogenous factors, and (3) general or local factors.

Localized prodromes of periodontal disease are inadequate oral hygiene, supragingival or subgingival accumulation of calculus, lack of contact points, food impaction, imperfect fillings, inadequate tooth restorations and periodontal pockets.

Premature tooth losses leading to changes in the masticatory function, proliferation of the marginal gingivae, and habitual alteration of the occlusal resistance also may be considered as promoting factors in the development of periodontal disease.

The presence of a complex periodontal microbial flora affects the deeper tissues such as the alveolar bone, dentin and cementum. Resorption of these tissues leads to the formation of deep periodontal pockets and thereby to a disintegration of the periodontal membrane and to tooth mobility.

Prosthetic procedures which are unable to correct the pathologic changes in occlusion and articulation, locally as well as intermaxillary, should be avoided. Ill-fitting tooth restorations not only increase the "foreign body feeling" in patients but may lead to parafunction of the masticatory system.

Inflammations, caused either by accidental or occlusoarticular disturbances, exert an adverse influence on the blood supply to the periodontal tissue.

Bacteriological determination of the motile and nonmotile microorganisms in the oral cavity, whether living or dead, is as important as the use of antibiotics in the treatment of periodontal disease.

Among the exogenous factors are dental plaques, calculus, food impaction, inadequate oral hygiene, positional anomalies, habitual mouth breathing, disturbances in salivation, changes in the physicochemical properties of the saliva, toxic stimuli, infection, dental caries and any bio-

dynamic transformation within the periodontium.

Among the endogenous factors are physiologic changes, effects of aging, nutritional and psychogenic influences, metabolic disturbances, neurovegetative disorders, blood diseases, allergies, poisonings and malfunction of the endocrine glands.

Among the general and local resistance factors are specific susceptibility, the genetic, biochemical and physiologic make-up of the body and all pathognomonic hereditary conditions.

In the treatment of periodontal disease, the use of difficult-to-control polypharmaceutic drugs such as chemotherapeutic hormones, placenta extracts and estrogenic steroids is dangerous. The elimination of endogenous factors—which alone are not responsible for the occurrence of periodontal disease—by prescribing or administering these biochemical agents lies outside the domain of dentists.

The various inflammatory and noninflammatory types of periodontal disease seem to verify the hypothesis that disturbances of the reticuloendothelial system or individual weakness in the reparative activity of cementoblasts, fibroblasts and osteoblasts play a major part in the etiology of periodontal disease. Individual susceptibility to this disease can be assumed in most instances. This susceptibility may be acquired, familial, inherited or racial and becomes manifest by malfunction of the cells, the organs or the entire organism.

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Studies on periodontal healing

Melvin L. Morris. *Rev. A. odont. Argentina*
47:255-262 June 1959

Ideally, the treatment of degenerative or inflammatory periodontal disease should result in complete regeneration of the lost periodontal tissues, but, with a few exceptions, this objective has not been attained. The present investigation was undertaken in the belief that a study of the histologic finding in periodontal lesions produced ex-

perimentally in human subjects might provide basic information needed for the solution of the problem.

Experimental wounds were made between the labial gingiva and the roots of upper anterior teeth destined for later extraction. After suitable post-operative periods the teeth and labial gingivae were removed *en bloc* and studied histologically. Teeth with natural or pathologic pockets served as controls.

Since the permanent integrity of the periodontal tissues depends on the continuous apposition of cementum to include new periodontal fibers, the fundamental problem in healing or reattachment seems to be that of the formation of cementum. This was found in all the teeth with surgically produced periodontal pockets, regardless of the layer exposed. New cementum was deposited on exposed dentin, but this reaction was greatly modified by the status of the pulp, as demonstrated by the fact that little or no cementum was deposited on the dentin of teeth with root canal fillings. In the control teeth, reattachment did not take place after removal of the epithelium by curettage. In this connection, it was noted that the epithelium did not grow down again to form a lining for at least several weeks, long after the time when reattachment could have occurred.

These preliminary studies have established several facts and posed many unanswered questions. It is certain that there is a relation between the status of the pulp and the condition favorable to the deposition of cementum on the dentin, and that the periodontium will always regenerate when it is in contact with recently exposed cementum. It is possible that there are differences in metabolism between the apical and cervical regions of the root. Some evidence has also been found to support Gottlieb's theory that periodontal pockets may result from a break in the continuous apposition of cementum. In this "cementopathia," there would be no mechanism for the inclusion of new periodontal fibers as the old fibers wear out.

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Public health dentistry

Heredity and dental caries

J. N. Mansbridge. *J.D.Res.* 38:337-347
March-April 1959

The evidence that susceptibility and resistance to dental caries in rats can be inherited suggests the possibility that genetic constitution also may be a factor influencing susceptibility and resistance to caries in man. This study was undertaken to investigate the dental caries experience of monozygotic (identical) and dizygotic (fraternal) twins and, by comparison, to assess the relative importance of heredity and environment as factors in the causation of caries.

Two hundred and twenty-four pairs of like-sex twins in Edinburgh, ranging in age from 5 to 17 years, were examined; 96 pairs were monozygotic and 128 pairs were dizygotic. For each pair of twins, an unrelated child was selected, of the same age, sex, and possessing the same number of teeth erupted as one of the twins. This child, paired with one twin, provided a control pair. A comparison was made of the dental caries experience of monozygotic twins, of dizygotic twins, and of the unrelated pairs.

Between both types of twins and their respective controls the differences in similarity of caries experience were highly significant, the twins showing high concordance and low discordance in dental caries, whereas the controls showed low concordance and high discordance. Resemblance in caries experience between monozygotic twins was greater than between dizygotic twins, whereas the unrelated pairs of children showed less resemblance than either type of twin. The evidence was considered convincing that the shared environment of the twins resulted in a greater similarity in their caries experience, whereas the differing environment of the unrel-

ated pairs resulted in a considerable difference in the caries incidence between the pair members. It was concluded that environmental conditions constitute a major factor in the etiology of caries.

The extent of the differences found between twins and the unrelated pairs of children was unexpected when viewed against the background of the relatively homogeneous environment of modern urban civilization. It suggests either that greater differences in individual environment exist than might be expected, or that susceptibility to caries is sensitive to relatively minor differences in environment.

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Development of coatings for application to teeth

Robert C. Caldwell, Anne Gallagher and R. Winston Liggett. *J.D.Res.* 38:197
Jan.-Feb. 1959

One approach to the prevention of dental caries is to form a protective coating on the tooth surface. A successful coating should adhere to the enamel surface for a reasonable length of time and be resistant to wear and to the action of salivary enzymes and their products.

Mandibular incisors from cattle were used to test various coatings. The teeth were washed in water, cleaned with a slurry of pumice and given a prime coating to produce an adhesive surface. The primer was tetrabutyl orthotitanate in a 2 per cent solution of naphtha; it was painted on the teeth and allowed to air dry for five minutes. Another primer, Eastman 910 adhesive (a cyanoacrylate monomer), also was tested. Various silicone compounds were investigated as coatings. After being coated, the teeth were stored in water at room temperature for two months. The teeth were then examined for discoloration and for peeling or "tacking" of the coating.

Use of a primer prior to application of the protective coating improves the effectiveness of the coating. The most satisfactory primer was tetrabutyl orthotitanate. The silicone adhesives were unsatisfactory because subsequent coatings were tacky or peeled off.

A 2:1 mixture of Dow Corning 200 Fluid (a dimethylpolysiloxane) and Tennessee Eastman

Chemical Products' 910 adhesive (cyanoacrylate monomer) proved to be a water repellent, non-peeling coating. Dow Corning 200 Fluid applied over tetrabutyl orthotitanate also gave a satisfactory result.

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**Reduced oral temperatures
and acid production rates in dental plaques**

William R. Stanmeyer and Robert J. Adams.
J.D.Res. 38:905-909 Sept.-Oct. 1959

Among the several factors influencing the growth, multiplication and activity of bacteria is temperature. For example, *Lactobacillus acidophilus* produces optimum growth at 98.6°F., and no growth at 68° to 71.6°F.

During the International Geophysical Year, a dental office was maintained at Little America, Antarctica; five volunteers were chosen, who had 176 plaques on their teeth.

A minimum of 120 minutes after eating and 60 minutes prior to going into the cold, about 3 cc. of unstimulated saliva was collected from each subject. Plaque pH values were measured on the buccal surfaces of the maxillary and mandibular posterior teeth and the labial surfaces of the upper and lower anterior teeth. The subjects then were given 75 cc. of a 20 per cent glucose rinse, which they held in their mouths without agitation for 60 seconds, and 15 minutes later the plaque pH values again were taken at room temperature (68°F.). The subjects then went out of doors for at least 75 minutes in temperatures ranging from -31° to -57°F. A second 3 cc. sample of unstimulated saliva was collected for lactobacillus counts during exposure to cold temperatures. The subjects again were given a 20 per cent glucose rinse, remained outdoors for another 15 minutes, and then returned indoors to room temperature. Two minutes later the pH values of plaques previously recorded were measured. Tooth temperatures both indoors and outdoors were measured later by means of a direct reading thermocouple unit.

The mean plaque pH of the 176 plaques measured at room temperature was 6.44 with a stand-

ard deviation of 0.58. The initial drop in pH after a carbohydrate rinse was 0.42, with a mean plaque pH recording of 6.02 and a standard deviation of 0.54. At the end of 75 minutes' exposure to cold temperatures the mean plaque pH was 6.51 with a standard deviation of 0.33. The second carbohydrate rinse was given, and after 15 more minutes out of doors the mean plaque pH remained unchanged at 6.51 with a standard deviation of 0.43.

A pronounced reduction in lactobacillus count was found after the 75 minute period of outside exposure to extremely low temperatures. One man showed zero count both before and after. Counts from four men which ranged from 600 to 7,800 at room temperature dropped to 0 after exposure to cold.

Exposure to cold temperatures greatly inhibits or completely attenuates bacterial action. Decrease in bacterial action was found to be correlated positively with decrease in tooth surface temperatures.

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**The Evanston dental caries study:
XIX. Prevalence of malocclusion of children
in a fluoridated and control area**

I. N. Hill, J. R. Blayney and W. Wolf.
J.D.Res. 38:782-794 July-Aug. 1959

Although dental caries is considered by some authors to have a detrimental effect on occlusion, there is no agreement on the amount of malocclusion stemming from the early loss of teeth.

In the course of the Evanston dental caries study (which has been described in previous papers), many of the Evanston children examined at 6, 7 and 8 years of age were re-examined at 12, 13 and 14 years of age. This made possible observation of the occlusion of these children during a growth period. The classification of malocclusion was judged primarily from the mesiodistal positions assumed by the first permanent molars on their erupting and locking. In subjects judged to have normal occlusion, the molars were in proper mesiodistal relationship and the remaining teeth were in normal relationship.

The 1946 prefluoride base line group showed 62.49 per cent with normal occlusion. In the 1955 group, with eight years of exposure to fluoridated water, 70.46 per cent had normal occlusion. Children in the fluoride-free control area showed little difference between examinations spaced nine years apart; 72.28 per cent had normal occlusion in 1947 and 69.02 per cent had normal occlusion in 1956.

When the children 12, 13 and 14 years old, examined in the 1946 prefluoride base line group, were compared with those examined in 1957 after a ten year exposure to fluoridated water, normal occlusion was noted in 44.17 per cent of the prefluoride group and 53.68 per cent of the fluoride group. Of children in the fluoride-free control area, the 1947 group had 54.89 per cent with normal occlusion and the 1956 group had 51.35 per cent with normal occlusion.

There was a definite increase in the percentage of children with normal occlusion for all ages in the fluoride group as compared to the prefluoride base group for all ages.

No increase was found in the percentage of children having orthodontic treatment, in either the prefluoride or the fluoride groups.

No definitive statement can be made at present regarding fluoridation and its effect on the prevalence of malocclusion.

University of Chicago, Chicago, Ill.

Dietary habits and the dental caries experience in 200 children

Alegria C. Zita, Ralph E. McDonald and Aaron L. Andrews. *J.D.Res.* 38:860-865 Sept.-Oct. 1959

This study was undertaken to accumulate more evidence relative to the effect of dietary habits on the dental caries experience in 200 children—106 boys and 94 girls—ranging in age from 5 to 13 years. Twenty-five children lived in rural areas, and 175 resided in or near Indianapolis. With the aid of the compilations of Bowes and Church (1956), the diet of each child (surveyed over a seven day period) was reduced by calculations to equivalent teaspoons of sugar.

The mean weekly total sugar intake equivalent was 164 teaspoons; the mean between-meal sugar

intake equivalent was 55 teaspoons. About a third of the weekly total sugar intake thus was consumed in the form of between-meal snacks.

There was little relationship (+0.10) between the total sugar consumed and the dental caries experience as measured in DMFS (decayed, missing and filled surfaces).

A high positive correlation (+0.77) of the between-meal sugar intake and DMFS was noted. There was very little correlation (+0.18) between the frequency of eating and DMFS. There was a slight negative correlation (-0.08) between total milk intake and DMFS.

In equal numbers of children of the same ages, the mean DMFS of the girls (7.07) was higher than the mean DMFS of the boys (6.31). The difference, however, was not statistically significant using the critical ratio technic.

The children residing in the city had a higher DMFS (mean 6.9) than the rural children of comparable ages (mean 4.92). Resulting tests indicated a significant difference in the dental caries experience between the rural children and those in the city at the 4 per cent level of confidence.

School of Dentistry, Indiana University, Indianapolis, Ind.

Alveolar bone loss as related to oral hygiene and age

Olav Schei, Jens Waerhaug, Arne Lovdal and Arnulf Arno. *J.Periodont.* 30:7-16 Jan. 1959

The influence of oral hygiene on the resorption of alveolar bone was evaluated in a group of 737 male workers and staff members up to 45 years of age employed in a modern industrial plant in Norway. Persons were classified in three groups according to the efficiency of oral hygiene, as good, fairly good and not good.

A set of ten roentgenograms was taken of the mouth of each person; in the roentgenograms the percentage of bone loss was measured on the mesial and distal surfaces of all the teeth. Optimum bone height was considered to be present when the alveolar crest reached 1 mm. or less from the cementoenamel junction.

The following conclusions were reached:

1. Loss of alveolar bone increases with a decrease in the efficiency of oral hygiene.
2. Loss of alveolar bone increases with age.
3. The alveolar bone around the teeth seems to be subjected to resorption in the following tooth order: anterior teeth, molars, bicuspids and cuspids.
4. Right-handed people usually brush the left incisors better than the right incisors. This asymmetric toothbrushing manifests itself in more bone loss on the right side.

Norwegian Institute of Dental Research, Oslo, Norway

A survey of dental health knowledge in New Zealand

J. Francon Williams. *New Zealand D.J.*
55:121-126 July 1959

To determine the current knowledge of members of the New Zealand public on some aspects of dental health, 5,000 copies of a questionnaire containing 16 questions were sent to rural, semirural and urban subjects consisting of an average cross section of New Zealand people. Replies from 1,225 persons indicated that people included in the survey were relatively well-informed on the cariogenic properties of certain carbohydrate foods, the importance of toothbrushing, and of periodic dental inspection. Seventy-four per cent of the respondents thought it possible to retain natural teeth all their life; 87 per cent said caries could be caused by between-meal snacks of biscuits and cakes; 73 per cent said deciduous teeth were worth saving by means of restorations; 76 per cent said a child should receive his first dental inspection between the ages of two and three years; 92 per cent said that milk helped to build strong teeth; 87 per cent said that a person with natural teeth should use a toothbrush immediately after meals, and 85 per cent said that a person with natural teeth should visit a dentist every six months.

Housewives and professional persons obtained significantly higher scores than members of the clerical, skilled, unskilled and rural groups.

Answers to other questions indicate that ad-

ditional attention should be devoted to stressing the value of conservative dental treatment and to improving the methods employed in conservative dental treatment.

Members of the public generally are uncertain about the cariogenic properties of honey; 31 per cent said that honey helped build strong teeth, 28 per cent said it didn't, and 41 per cent were uncertain.

Few persons know how long an artificial denture should last; 11 per cent said 5 years, 15 per cent said 10 years, 11 per cent said 20 years, and 24 per cent said indefinitely. The need for having early inspection and renewal of dentures may not have been sufficiently emphasized by dentists.

It would seem that the public is reasonably well-informed at least about those topics which dental health education has stressed in the past. The public is not so well-informed on other aspects of dental health, including periodontal disease, orthodontics and the importance of maintaining healthy oral structures.

Professional people, in view of their higher educational attainments, could have been expected to exhibit a higher standard of knowledge of dental health than proved to be the case. The introduction of informative programs to meet the needs of various professional groups should be considered.

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Fluorine and iron in the ground waters in Finland

Matti Wäre. *Tekn. Aikl.* 49:160-162 July 1959

In 1958, a study was made of the fluorine (fluoride ion) content of the drinking water in rural communities throughout Finland; 2,768 samplings of water were assayed. Only a very small proportion of the samplings contained as much as 1 ppm of fluorine; the ground water rich in fluorine occurred along the southern border of Finland. Water containing about 1 ppm of natural fluorine is consumed by about 150,000 Finns.

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Ionizing radiation and medicine

Shields Warren. *Scient.Am.* 201:165-176
Sept. 1959

When, in 1895, Wilhelm Conrad Röntgen discovered roentgen rays—the first form of ionizing radiation known to man—he realized the fantastic dream of providing a way to see inside the human body. Röntgen saw the first interior "view" of living human tissue when he unintentionally fluoroscoped his own hand while holding a bit of lead between a fluorescent screen and the cathode-ray tube that produced his roentgen ray. A few days later Röntgen made the first roentgenogram when he used the newly discovered rays to picture his wife's hand. Röntgen, a physicist, was so well aware of the implications of his discovery for medicine that he gave the first report of it to the Physical Medical Society of Würzburg rather than to an organization of physicians.

In making the roentgenogram of his wife's hand, Röntgen applied the principle that the shadow cast by roentgen rays varies in density with the density of the substance through which the rays pass. Because bones are denser than soft tissues, they more effectively absorb roentgen rays. When an x-ray machine is set at 40,000 volts (40 kvp in radiation terminology), almost any tissue will stop some of its radiation and cast a shadow on film. Injured or diseased tissue often appears on roentgenograms lighter or darker than surrounding tissue, because of departures from normal density. By itself, the roentgenogram or fluoroscope image presents only a shadow or silhouette of the subject. Any practitioner who has not had adequate training or extensive experience in roentgenology can overlook significant but subtle variations in the density of the image.

When the objective is to look at a particular

internal organ, an attempt is made to fill the organ, by one means or another, with a material that is relatively opaque to roentgen rays. The heavy and correspondingly dense atoms of iodine frequently contribute the desired radiopacity to compounds used for making internal organs visible in roentgenograms.

The exposure to ionizing radiation during a given diagnostic roentgenographic procedure can vary by a factor of 10 or more, depending on the patient and his condition, on the machine and its accessories and on the knowledge and ability of the physician or dentist. Generally, much larger doses of radiation result from fluoroscopy than from roentgenography.

The fact that radiation can damage living tissue became apparent soon after the discovery of roentgen rays and radioactivity. Early investigators found themselves suffering intractable burns and even more serious injuries. Many of these injuries later became malignant. The destructive effect of the new radiation technics suggested that they be used to attack diseased tissue. It was observed that roentgen rays were especially damaging to rapidly dividing cells, such as appear in cancerous tissue. Soon, roentgen rays were being employed for the therapy of malignant and benign tumors, in some instances with apparently good results.

Today, radiation therapy is largely limited to malignant tumors and to benign tumors that present surgical difficulties.

Recently, investigators and clinicians have developed the possibility that whole-body irradiation might be employed to suppress the immune or antibody response so that the patient can accept a tissue graft from another person. In human beings the results are not yet clear-cut; whole-body irradiation, destroying the blood-forming tissues where antibodies originate, has made it possible to transplant blood-forming and other tissues to experimental animals from animals of different species.

Although x-ray machines still are the major source of ionizing radiation for diagnosis and treatment, radioactive isotopes are becoming more important. A wide variety and large quantity of such isotopes now are manufactured in reactors; the most useful to medicine are cobalt⁶⁰, phosphorus³², iron⁵⁹, iodine¹³¹, sodium²⁴

and gold¹⁰. The radioisotopes have been proved useful in diagnosis but disappointing in treatment.

In the 64 years since Röntgen's discovery, the diagnostic and therapeutic applications of radiation have approximately doubled the radiation dose received by the population of Western nations. Natural background radiation gives man an average dosage of 3 to 5 r from birth to age 30, roughly the reproductive span. The dosage from medical and dental radiation in the same period equals the background dosage. Radioactive fallout from tests of nuclear weapons contributes 10 per cent of the combined medical and dental doses, provided that the present test suspension continues.

Like the surgeon who tries to leave the smallest possible scar, the roentgenologist who is proud of his skill watches every detail in order to leave as little radiation "scar" as possible. The patient need not fear ionizing radiation in the hands of a skilled practitioner. The boon conferred on man by Röntgen, Henri Becquerel, Marie and Pierre Curie and other workers has been a mighty force for the conservation of life and will continue to be so. The dangers have been decreasing and the benefits mounting. The objective in medicine, as well as in dentistry, is to make ionizing radiation an unmixed blessing.

Harvard Medical School, Boston, Mass.

Survey of x-ray exposure to dental personnel in private dental offices of Georgia

John S. Chrietzberg, William J. Putnam and Charles B. Jones. *J. Georgia D.A.* 33:2:20-22. Oct. 1959

To determine the extent of excessive radiation, if any, to personnel in private dental offices of Georgia, a state-wide survey was conducted in 270 offices having 304 dentists, 519 auxiliary personnel and 362 x-ray machines. Numbered

clip-type film badges were issued to each dentist and each auxiliary employee. Wall-type film badges were affixed at seemingly vulnerable sites throughout the office to determine possible areas of excess radiation. At the end of the four-week survey period, the badges were received by the Dental Health Services of the Georgia Department of Public Health, were processed and read by a commercial firm and the results recorded.

Seven hundred and forty of the 823 persons studied (90 per cent) received less than 25 mr per week, or less than one fourth of the maximum permissible dose. Only seven dentists, two hygienists and two assistants (1.3 per cent of the dental personnel) received more than the maximum permissible dose of 100 mr per week. These 11 persons were working in offices where the x-ray machines were old and had neither adequate filters nor diaphragms. If any badge indicated an exposure of more than 100 mr per week, recommendations were made to the dentist to correct known deficiencies, such as adding filters and diaphragms when they were lacking. After these corrections, a follow-up survey was made to determine if the excessive radiation had been reduced significantly.

Ninety-six per cent of all x-ray machines studied were equipped with short cones—8 inches long or less—and 82 per cent of all machines had timer cords 4 to 6 feet long.

When the report showed that all film badges in an office recorded an amount less than 100 mr per week, the dentist was sent a certificate which stated that "the x-ray equipment and techniques were employed in a safe manner and no excessive radiation was observed during the dates of this survey." Each dentist was sent a report of the radiation findings of his office, and a copy of the manual prepared by the American College of Radiology on the medical and dental use of x-rays with control of radiation hazards.

Georgia Department of Public Health, Atlanta, Ga.

Therapeutics

A new vehicle (Orabase) for the application of drugs to the oral mucous membranes

Austin H. Kutscher, Edward V. Zegarelli, Frank E. Beube, Neal W. Chilton, Charles Berman, James L. Mercadante, Irving B. Stern and Norman Roland. *Oral Surg., Oral Med. & Oral Path.* 12:1080-1089 Sept. 1959

Treatment of chronic lesions of the oral mucous membranes has been hampered by the difficulty in maintaining medications at the site of application. Orabase is a new vehicle containing four essentially nontoxic ingredients—gelatin, pectin, carboxymethyl cellulose and Plastibase. Orabase adheres and maintains itself at the site of application over relatively prolonged periods, thereby (1) increasing the potential effectiveness of medications by maintaining higher concentrations of the agent at the site of the lesion, (2) decreasing the total amount of material which need be applied, (3) increasing the duration over which the material will remain in place, (4) decreasing the amount of material which would be swallowed, and (5) providing a useful mechanical coating over the lesion.

Clinical tests were undertaken on 119 patients (784 applications) to study the potential usefulness of Orabase. The findings indicate that when 60 mg., 250 mg. and 125 mg., respectively, of this adhesive vehicle are applied to various sites in the oral cavity, the average duration of maintenance is as follows: dorsum of the tongue—25, 58 and 15 minutes; hard palate—23, 81 and 33 minutes; anterior labial gingivae—24, 94 to 109, and 56 minutes; lower lingual anterior—64 to 85 minutes for 250 mg., and 34 minutes for 125 mg.; mucosa of the cheek—25, 91 and 45 minutes; inner surface of the lower lip—103 minutes for

250 mg., and mucobuccal fold—108 to 152 minutes for 250 mg.

In no instance was there any evidence of irritation or other side reaction or toxicity, either local or systemic. These data indicate a potential usefulness of this material as a vehicle for topical oral medications and mechanical protection in the oral cavity.

630 West 168th Street, New York, N.Y.

Tic dououreux: treatment with diphenylhydantoin

Joseph F. Dorsey, Gordon W. Hayslip and Kittridge Anderson. *Clin. Med.* 6:1395-1398 Aug. 1959

Twelve unselected and consecutive patients with trigeminal neuralgia were treated with diphenylhydantoin sodium. Each capsule contained 0.1 Gm.; the total dosage, which varied from 0.2 to 0.6 Gm. daily, was given in divided doses through the day.

No major complications or side effects resulted, but usually patients with trigeminal neuralgia did not tolerate the drug as well as would patients with epilepsy.

Of the 12 patients treated, 5 were completely relieved of pain in a short time and required no further treatment. Two patients did not get complete relief, but the pain was so diminished that they did not request any other form of therapy. One patient whose trigeminal neuralgia was complicated by cerebral arteriosclerosis was excluded from the series. Four patients were afforded no relief and eventually required surgical intervention.

In those patients who manifested complete or partial relief, the drug commenced to take effect in 24 to 48 hours. None of the patients developed skin rash, although two became mildly ataxic.

The mechanism of action by diphenylhydantoin sodium in ameliorating trigeminal neuralgia is not known, although Iannone (1958) has suggested a theory. The data thus far accumulated suggest that this drug merits further investigation.

Tufts University School of Medicine, Boston, Mass.

Education

Education for the professions

J. William Fulbright. *Arkansas D. J.* 30:4-6
Sept. 1959

The increasing complexity of civilization has made the role of the professional man more difficult than before. He must wear "two hats." He is not only the practitioner of his art, but he also is looked on as a leader of thought and action in local and national affairs. The men of the professions are guardians of human values.

There is little doubt of the shortage of professional men in the United States. In 1930 there were 58 dentists per 100,000 population. The number of active dentists per 100,000 persons will fall to 43 by 1975 if population continues to increase at predicted rates. Without additional training facilities it is expected that there will be a national deficit of 35,000 dentists by 1975. Demands for dental care undoubtedly will increase with improved economic conditions, and the shortage by 1975 will be even more serious than the figures indicate. This situation must be corrected if we are to have a standard of dental care comparable to our standard of living.

Forty-seven dental schools now are in operation, and plans exist for opening several more schools. Many schools undoubtedly will expand their facilities to accommodate more students.

The emphasis placed by the dental profession on advanced educational programs is an indication of the efforts being made to maintain a vigorous profession. There are over 375 graduate and postgraduate programs offered by the nation's dental schools, an increase of almost 80 per cent in the last five years. In addition, nearly all dental schools offer short refresher courses. Many dentists take advantage of the opportunities offered by these programs.

Dentistry is seizing the opportunities for research. However, a comparison of the \$210,000,-

000 spent annually on tooth pastes and tooth powders with the \$10,000,000 voted by the Senate for activities of the National Institute of Dental Health this year leaves much to be desired. The success of fluoridation indicates the results which can be achieved through adequate research. Yet much remains to be done. Three out of four persons in the United States have an oral disorder of some type, and tooth decay affects 95 per cent of the population. Dental disease is a national problem which costs the public over \$1,750,000,000 for dental care each year. Research can help correct this situation.

The professional man must prepare himself to be a responsible citizen and leader. Far-reaching changes are taking place in the world every day, and it is incumbent on the dentist, physician and lawyer to know about these changes if the professional men are to continue to wear the mantle of leadership. "We are not put into this world to sit still and know; we are put into it to act."

U.S. Senate Office Building, Washington, D.C.

Dental [alumni] association wins top award

Indiana Alumni Mag. 22:6-7 Oct. 1959

The Indiana University School of Dentistry Alumni Association has received the Constituent Society Achievement Award in recognition of its activities during 1958 to 1959 by the Indiana University Alumni Association. The award was presented to Willard H. Damm, president of the Dental Alumni Association, in September 1959. The group was cited for its membership growth and the close relationship between the School of Dentistry and the dental alumni. Each spring prior to graduation the senior class of the School of Dentistry is informed about the program of the alumni association and the advantages of participation. More than 95 per cent of the graduating classes become active members.

The Dental Alumni Association has raised over \$7,000 for athletic scholarships; Joseph C. Muhler, Indianapolis, was chairman of the project, and 26 meetings were sponsored throughout the state to inform Indiana dentists of the program. The association also sponsors alumni meetings during the annual midwinter meetings of the Chicago Dental Society. In 1954, the associa-

tion established a dental scholarship fund within the Indiana University Foundation; the dental scholarship fund now totals nearly \$3,000 and is used for student loans. The association has a student recruitment committee which participates in high school career days and science fair programs and supplies bulletins on dentistry as a career to high schools and undergraduate schools.

Indiana University Alumni Association, 301 Union Building, Bloomington, Ind.

Dentistry
around the world

Problem of dental manpower in the United Kingdom

R. O. Walker. *Rev. Belge Sc. Dent.* 14:301-307
July-Sept. 1959

In attempting to define the "dental health of the population," the problem is encountered immediately how to reconcile the needs of the people with the demands made by the people for dental treatment.

In the United Kingdom, it is difficult to imagine a community in which all dental needs of the population are adequately met by a fully employed dental profession.

The problems arising from the present shortage of dental manpower in the United Kingdom are closely related to the existence of the National Health Service, and it can be assumed that the economy of Great Britain will permit the continuance of a dental service for the community not inferior to that established after ten years of experience with this program.

Prior to the inauguration of the National Health Dental Service in 1948—in effect, a nationwide program of dental health education—the dental demands of the population were more than adequately met by approximately 15,000 dentists. The impact of the National Health Dental Service, which attempted to provide from the outset free dental treatment for all, was such that the de-

mands made on the profession were more than doubled. This was greatly in excess of the government's expectations and beyond the capacity of the profession to provide. More than 20,000 practicing dentists are needed to meet the foreseeable demands of the public, and the recommendations of the dental association, subsequently made, were based on this figure.

The situation was aggravated by the fact that after World War II, none of the dental schools were fully attended. This can be taken as an indication of some reluctance on the part of students to take up dentistry as a career.

The status of the dental profession compares unfavorably with that of other professions, especially medicine, which are competing with dentistry for new entrants.

The relations between the dental profession and the general public are poor. Little dental health information ever appears in the press, radio and television, but undue publicity has been given to the misdemeanor of the few who have exploited the National Health Dental Service for personal gains. This lack of information is particularly noticeable among teachers and parents who might be expected to influence students in their choice of career.

The course of study (approximately five and a half years) is one of the longest and most expensive in the university curriculum, and grants or scholarships are inadequate to attract students with limited incomes.

Only a small percentage of dentists can expect to attain opportunity for advancement outside general practice, and this fact results in other professions being preferred, especially by ambitious students with academic inclinations.

It is realized that the dental requirements of the entire nation must be dealt with under circumstances in which a shortage of qualified dentists exists, and that, therefore, auxiliary personnel must be utilized to perform certain dental services. No one can doubt that many of the parts which constitute the practice of dentistry can be performed by nondentists trained in less time than it takes to educate a qualified dentist. The real problem lies in the relationship of these auxiliaries to the dental profession.

Any increase in the efficiency of dentists by the application of modern methods and the efficient

use of chairside assistants, together with the employment of suitable trained personnel, could go a long way to meet the present situation.

The shortage of dentists relative to present and anticipated future demands is recognized by the government, the public and the profession. Any increasing awareness by the public of the need for dental treatment will aggravate an already precarious situation, whereas any restriction of the demand which might arise from an economic recession would soon equate the capacity of the profession to the call on its services.

There seems no likelihood of any significant improvement in the situation within the foreseeable future either by an increase in dental manpower or by employment of auxiliary workers. The major problem will still remain the maintenance of the health and the contentment of an overworked profession.

The most profitable and realistic manner of tackling this problem would seem to be the education of the public by the profession in methods of prevention of dental disease, but progress in this area is slow, and will likely remain so until the government and the profession co-ordinate their efforts in this direction and funds are made available to finance a national program of dental health education.

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England

A cursory glance at Japanese dentistry and anesthesiology

Bruce L. Douglas. *J.Am.D.Soc.Anesthes.*
6:10:18-21 Dec. 1959

In Japan, the attitude towards the mouth and teeth is similar to that of many countries with comparable social and economic development. The attitude towards the preservation of the teeth is similar to that in the poorer areas of the United States.

Japan has seven dental schools and a population of 92,000,000 persons. Few Japanese dental schools are allied with universities. The Japan Dental Association is not as well developed as is the American Dental Association. But Japanese dentists know about developments in dentistry in other nations of the world. There is a close bond

between dentistry in Japan and in the United States and Germany. American dental literature is read carefully by leading Japanese dental scientists. The Japanese perhaps place a greater emphasis on dental research than do the Americans. Both the undergraduate and the graduate dentist in Japan participate in some form of scientific research; perhaps this emphasis on research can be traced to the prewar influence of the German educational system.

Clinical progress is apparent. Private practitioners are enjoying higher incomes than they were seven years ago, at the time of the author's last visit. Dental education is benefiting from greater financial investments in the oral health of the nation. Dentistry is a thriving, growing profession. For instance, the Okayama Prefectural Dental Society (equivalent to a state dental society in the United States) has its own building and full-time staff. Health insurance plays an important role in dental care; it has led more people to the dentist for treatment, but tends to restrict dental income.

Anesthesiology in both medicine and dentistry is years behind the levels attained in the United States. Drugs are available, however, and more anesthesiologists are becoming available. Most of them have received recent training in the United States. Only one dental school has a separate department of anesthesiology.

In dentistry, only local anesthesia is used for outpatients. In the hospitals, accepted technics of nasotracheal intubation and intravenous barbiturate anesthesia with muscle relaxants are used. Operating room procedure and the training of the dentist-anesthesiologist differ radically from those in the United States. Japanese dentists are trained in a fashion which is more conducive to including anesthesiology in the practice of dentistry. Japanese dentists working in the surgical-anesthetic team often are better prepared to handle the medical needs of the patient, but their technic lacks the polish found in the average American operating room. Japanese dentists are taught intravenous technic and the use of the stethoscope and sphygmomanometer in dental school, but are not as specialized in the treatment of the oral cavity as the average American dentist. Ambulatory anesthesia is practically unknown. A patient who comes to a Japanese dental office or

outpatient clinic for exodontia expects to have local anesthesia. The materials for local anesthesia which are readily available in dental offices in the United States rarely are used in Japan. Local anesthetic solutions rarely come in ampules and, therefore, are not administered with dental syringes. Such solutions are mixed daily and injected through hypodermic syringes. All injections are accompanied by aspiration to determine if the needle is in a blood vessel.

Conservation is an important part of the Japanese tradition, and few things are discarded. Disposable syringes, needles and scalpel blades are not used. Even gauze is rewashed and re-autoclaved until it is useless. The Japanese know what to conserve and how to conserve. This thriftiness springs from their struggle for existence in a small geographic area, and is part of the cause for the nation's postwar economic progress.

Okayama University Medical School, Okayama, Japan

Leaves from the log of a Far North dentist

E. T. Hunt. *D. Delineator* 10:3:14-16
Autumn 1959

The author's first three year tour of duty with the International Grenfell Association, Newfoundland, extended from July 1947 to June 1950. He later served for six years with the Indian Health Service of the Canadian Department of National Health and Welfare in the North West Territories. In many of the places he visited, he was the first dentist the Eskimos and Indians had ever seen. In just one year of service he traveled 11,020 miles by plane, 2,600 miles by boat, 305 miles by dog team, and 120 miles by car or truck. He treated 5,025 outpatients, extracted 2,446 teeth, provided 2,524 amalgam and 499 silicate restorations, and performed 554 prophylaxes.

Aklavik, where the author set up his surgery, lies on the west side of the Mackenzie delta nearly 150 miles within the Arctic Circle. For eight months, this lonely settlement of 200 buildings was cut off by ice which packs along the river. The settlement accommodates about 350 white people and about 1,500 Eskimos and Loucheux Indians. There was a great demand for dental services from the white inhabitants. Only 14 per

cent of the native children in the Anglican school and 13 per cent in the Roman Catholic school required dental work.

One irregularity common to the children in each area visited was the relatively early age at which the permanent teeth of the native child erupt. At the age of six years the children have the normal dentition of a white child of the same age; thereafter, there seems to be an acceleration in tooth development, with the canines erupting at the age of ten years and the permanent second molars often erupting by the eleventh birthday.

At Coppermine, 48 per cent of the inhabitants, in all age groups, were caries-free, and no patient showed signs of severe caries. The diet of the Eskimos in this area is a natural one of game supplemented by some store foods.

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Dentistry in the United States and in Switzerland

Hans Freihofer. *Neue Zürcher Ztg.* No. 3349:8
Nov. 3, 1959

The American Dental Association, the world's largest organization of dentists, was founded on August 3, 1859, and celebrated its 100th annual session (combined with the 47th annual session of the Fédération Dentaire Internationale) in September 1959 in New York. In this gigantic dental congress, about 35,000 dentists, including about 2,500 from foreign countries, participated.

A large number of researchers and scientists from all over the world met at the New York Coliseum and discussed the most recent developments in dentistry. Among them were the Swiss representatives, Prof. Baume, Prof. Held, Prof. Mühlmann, Dr. Boitel and Dr. Fitting.

The excellent organization of the New York meeting permitted dental researchers, scientists and specialists to obtain an excellent view of the newest advances of American dentistry, whereas dental practitioners could enjoy lectures, films, table clinics and exhibitions in which the most recent treatment methods, dental materials, medicaments, apparatuses, instruments and equipment were demonstrated.

After returning to Switzerland, the Swiss delegates were asked by dentists and patients whether the American dental profession has achieved a higher standard in dental treatment. Except for a few slight modifications, dental treatment in the United States does not differ from that in Switzerland. In modern times, all advances in dentistry are continuously reported in the national or international dental literature, and a satisfactory exchange of dental journals exists between the United States and the European countries. Most American dental journals, therefore, are available to Swiss dentists who study them thoroughly.

We also were asked whether the average American dentist can be considered as superior to his Swiss counterpart. Our visits to several American dental colleges as well as to a large number of dental offices have demonstrated that the American dentist possesses a high standard of knowledge and education which is carefully maintained by the American Dental Association and the state and territorial societies. Unquestionably, this training is reflected in dental practice. Postgraduate education at the dental colleges is available to every American dental practitioner who desires it, and the courses, lasting from a few days to eight months, usually are well attended.

Although we are willing to accept these facts, but without any willful damage to the reputation of our American confreres, I believe that Swiss dentists receive a professional training of at least similar quality which enables them to render the same high type of dental services to the Swiss population. The percentage of practicing dentists who regularly attend postgraduate courses at the dental institutes of the Swiss universities appears even to be higher than that in the United States.

In America, however, a wide specialization within the dental profession has taken place. Such specialization has not been found desirable by the Swiss Dental Association which puts more emphasis on the thorough education of the general practitioner.

In the United States, the federal and state authorities are far more interested in public dental health than are the Swiss national and cantonal authorities. The American Dental Association, in cooperation with the public dental health and school authorities, has initiated a great program of systematic education of the general public mainly to institute preventive procedures against dental caries and other oral diseases. Similar attempts, far too few and poorly organized, were not successful in Switzerland, probably because of lack of federal and cantonal support.

In Switzerland, also, no equivalent to the American Institute for Dental Research of the National Institutes of Health or the dental section of the Bureau of Standards exists. Only an adequate and direct support of dental research by the Swiss government would facilitate for our researchers (of whom we have a large number) the possibility of undertaking large-scale inquiries, examinations, investigations and experiments, as continuously performed by Americans.

The dental health of the American population, probably because of a superior standard in oral hygiene, seems more favorable than that of the Swiss population. The individual dentist and, therefore, the dental profession, enjoy a higher reputation, probably because the average American school child and his parents are more "dental-minded" than they are in Switzerland.

The American Dental Association and its 54 constituent state and territorial societies have been able to resist all attempts made by dental laboratories and technicians to treat patients. This still is an unsolved problem in Switzerland.

Our visit to the United States convinced us that many of the dental health procedures—which are almost routine in America—should be adopted by both the Swiss government and the Swiss dental societies. The adoption of such procedures would facilitate a significant increase in the health of the entire population.

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Histology

Electron microscopic studies on nerves of human tooth pulp

Koji Uchizono and Kuninori Homma.
J.D.Res. 38:1133-1141 Nov.-Dec. 1959

Dental pulp from the teeth of healthy human subjects was sectioned and studied under Tronscope 50 and JTE-5G electron microscopes.

It was observed that a great number of the nerve fibers of tooth pulp were medullated, the diameters of the medullated fibers (including the myelin sheath) ranging from 1 to 6 microns. Most of the medullated fibers ranged from 2 to 3 microns in diameter. All transverse sections of fibers showed several mitochondria. The myelin sheaths ranged in thickness from 0.5 to 1.0 microns, and the lamellas were about 100 angstrom units wide.

Most nonmedullated fibers had diameters ranging from 1 to 2 microns. Such fibers were mostly found near or attached to the blood vessels, suggesting a relationship of such fibers to the autonomic functions.

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Electronmicroscopy of dental calculus

F. Gonzales and R. F. Sognnaes. *Science* 131:156-158 Jan. 15, 1960

The present study deals with a calcifiable biological system in which the deposition of bonelike crystals is demonstrated in a matrix independent of the cellular activities and fibrous protein synthesis of skeletal and dental organs, namely, dental calculus. Recently accumulated concretions of supragingival dental calculus were collected from the lingual surfaces of the anterior teeth of adult patients who tended to form such deposits repeatedly within a week or two. After the mate-

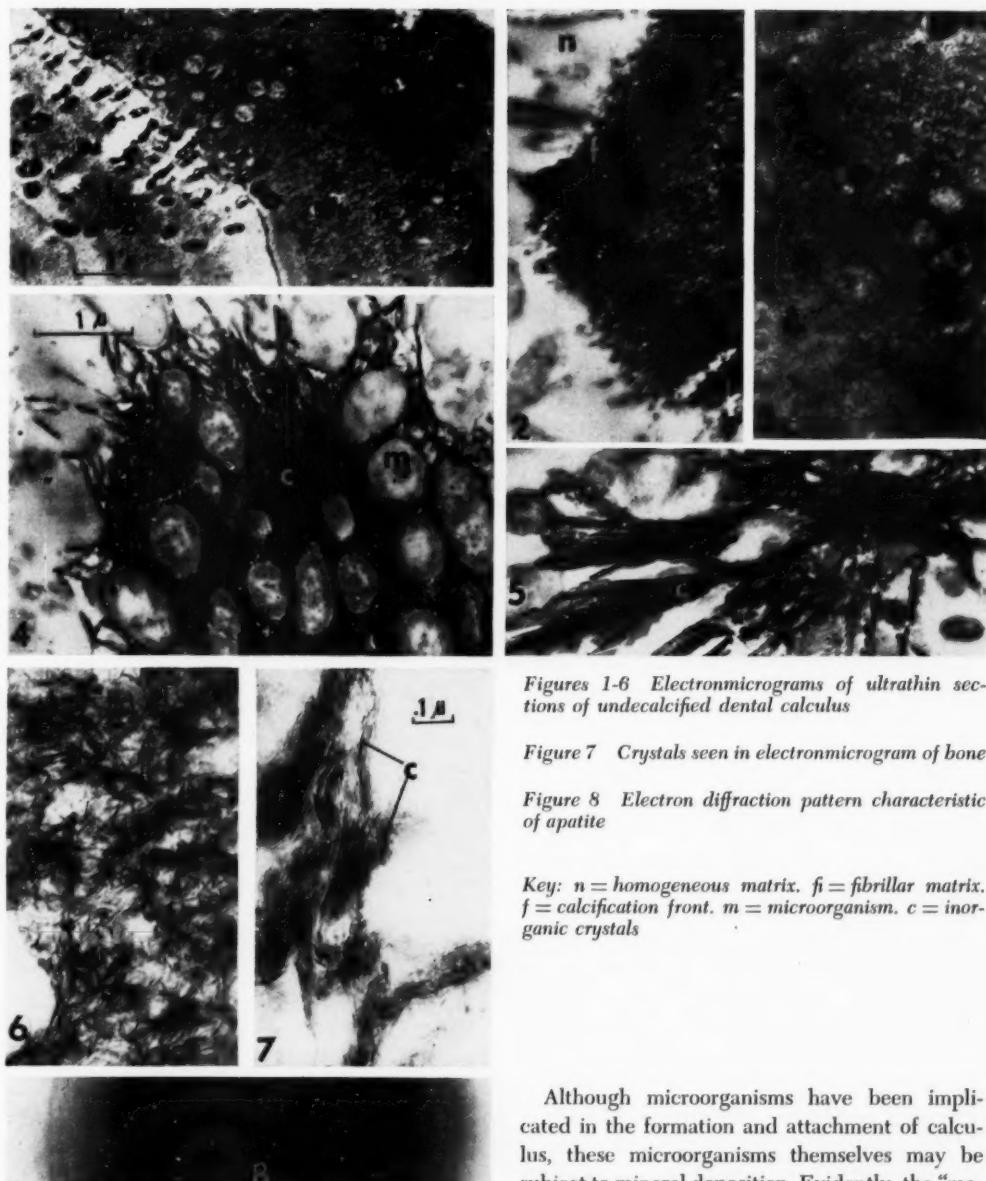
rial had been fixed in 10 per cent buffered osmium tetroxide for 18 hours, it was embedded in a mixture of 9 parts butylmethacrylate to 1 part methylmethacrylate. Without prior decalcification, sections were cut with a diamond knife and observed in the R.C.A. EMU 3-B electron microscope at 50 kv. Small uniform areas of the sections subsequently were examined by selected area electron diffraction.

At lower power (Fig. 1), a stratification of some calcified areas manifested itself as alternating, irregular bands of greater and lesser electron density. Two types of calcification fronts were observed: one was heavily mineralized (Fig. 2) and ended abruptly facing a structureless matrix of low electron density; the second type (Fig. 3) was less heavily calcified, more diffuse at its border, and faced a matrix consisting of a feltlike mat apparently containing delicate fibrillar elements. Perhaps the former type represented the older, more mature concretions, whereas in the latter the calculus was growing and not yet completely mineralized.

Within and beyond the areas of calcification, the sectioned calculus revealed numerous circular to oblong structures, 0.4 to 0.5 microns in the smaller dimension (Fig. 4), evidently representing cross-cut microorganisms.

The organisms seen in the electronmicrograms either were completely entombed within solidly calcified bodies (Fig. 4), or outside calcified bodies within a homogeneous matrix of low electron density (Fig. 2). Organisms within calcified areas were in various stages of degeneration. The crystals of mineral, initially occurring in spaces between organisms (Fig. 4), eventually occurred within organisms or the spaces remaining after the organisms had degenerated.

The inorganic crystals were of two principal size classes: (1) very large crystals measuring about 500 to 26,000 angstroms (Fig. 5) and,



Figures 1-6 Electronmicrograms of ultrathin sections of undecalcified dental calculus

Figure 7 Crystals seen in electronmicrogram of bone

Figure 8 Electron diffraction pattern characteristic of apatite

Key: *n* = homogeneous matrix. *fi* = fibrillar matrix. *f* = calcification front. *m* = microorganism. *c* = inorganic crystals

predominantly, (2) fine, randomly oriented crystallites measuring about 40 by 800 angstroms, of the same order of magnitude as those seen in bone (compare Fig. 6 and Fig. 7, the former being calculus and the latter, bone).

The principal crystal form in calculus has the electron diffraction pattern of apatite (Fig. 8).

Although microorganisms have been implicated in the formation and attachment of calculus, these microorganisms themselves may be subject to mineral deposition. Evidently, the "matrix" outside of the microorganisms represents the bulk of the calcified deposits. It is not known to what extent the microorganisms contribute to the conversion of this initially amorphous substance, presumably salivary mucus, into a calcifiable framework.

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Electronmicroscopic studies of dentin in the teeth of the bottle-nosed dolphin

Jörg Peter. *Schweiz. Mschr. Zahnhk.* 69:680-689 Aug. 1959

Dolphin, the zoologic term for the various small-toothed cetaceans related to the genus *Delphinus delphis*, occurs on the American coast in the form of porpoise, the bottle-nosed dolphin (*Tursiops truncatus*). Porpoises are from 5 to 8 feet long, and their jaws do not form a projecting beak. The extremely sharp teeth number from 160 to 200.

The dentin of these teeth was investigated electromicroscopically to demonstrate the structure of the basic tissues surrounding the dentin tubules in the peritubular zone.

The peritubular zone is part of the basic dentin substance which envelops the dentin tubules and is characterized by the direction of the fibers which run parallel to the tubules. The basic dentin substance in the teeth of porpoises is not separated by a membrane.

Electronmicroscopic studies revealed that an even connection exists between the fibers and the intertubular dentin through the entire peritubular zone.

Specimens of the inner walls of the dentin tubules show under the electronmicroscope that the tissues of the peritubular zone are identical with the fibrils of the odontoblasts. These noncalcified fibrils enter the dentin tubules through openings which are found on the inner walls of the tubules. Such noncalcified, collagenous fibrils also are found in the matrix of mature human dentin.

Evidence of a sheath, similar to the dentinal sheath in human beings, lining the dentin tubules has not been found in the dentin of the teeth of porpoises, but there are indications that the dentin matrix may be more compact at the immediate periphery of the tubules.

Electronmicroscopic studies of dentin in teeth of porpoises demonstrated the existence of periodic spacings, typical of collagen, in the fibrils of the matrix in both the developing and the mature dentin.

The sections studied under the electronmicroscope were made from specimens fixed in

Formalin, Zenker's fluid and osmic acid. The undecalcified developing dentin has been sectioned, as well as the mature dentin decalcified in nitric, hydrochloric, phosphoric, trichloroacetic and formic acids.

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Enamel lamellae and dental caries

Bertrand Kerébel. *Actual. odontostomat.*, Paris 13:197-213 June 1959

Histopathologic investigation of the possible relationship between the presence of enamel lamellae and the development of dental caries, carried out at the Dental School of the University of Paris, proved that no direct association exists between the organic elements of enamel and the advance of carious processes.

The relatively high incidence of enamel lamellae observed seems to explain the fact that various authors have assumed that these lamellae may serve as pathways for the passage of carious processes through the enamel. The presence of enamel lamellae and initial caries is a coincidence, because in instances in which enamel lamellae were absent, the carious processes seem to find no difficulty in attacking enamel and dentin, whereas fissures in the enamel, filled with bacteria, were found frequently without evidence of carious lesions.

In certain instances, lamellae occurred in the enamel well ahead of bacterial plaques promoting the beginning of caries. The initial carious lesion in the enamel appeared to be characterized by the following factors: (1) presence of bacterial plaques; (2) loss of translucency; (3) microscopic cavity formation; (4) change in color of the tooth surfaces, and (5) macroscopic cavity formation.

After the macroscopic cavity formation, there occurred the typical spread of the carious lesion at the dentinoenamel junction to the dentin. In several instances, there was evidence of histopathologic changes in the dentin prior to the advances of the causative microorganisms whether or not enamel lamellae were present.

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Etiology and treatment of pica

P. Lanzkowsky. *Arch. Dis. Childhood* 34:140-148 April 1959

Iron-deficiency anemia was found to be the contributing factor in 12 children exhibiting an abnormal craving for unnatural articles not considered to be food. In some of the children, hysteria and phobia seemed to be the causative factors.

After treatment with iron preparations, their pica disappeared within from one to two weeks; in many instances it has not recurred in one year.

Prior to treatment, pica had persisted for periods varying from 6 months to 3.5 years. In most instances the abnormal craving was so severe that the children had to be restrained.

The age level ranged from 20 months to 6.5 years. The intelligence level was average and above average. Most of the children showed good behavior, and all but one appeared to be well nourished.

Besides pica produced by severe iron-deficiency anemia, ten children were infested with worms. During the study, however, they received no treatment for this infestation.

Hemoglobin levels ranged from 3.0 to 10.9 Gm. per 100 cc. with a mean of 7.98 Gm. per 100 cc. Streptodornase level was 2.64, adequate to destroy fibrin and body cells, thereby promoting rapid wound healing.

The peripheral smears showed all grades of iron deficiency patterns. Iron dextran compound in doses of from 200 to 400 mg. was injected intramuscularly in nine children.

After treatment there was an average rise in the hemoglobin level of 3.54 Gm. per 100 cc. to a total average level of 11.43 Gm. per 100 cc.

In one girl who previously had received blood transfusion, pica occurred two months later; her hemoglobin level had dropped from 9.0 to 5.0

Gm. per 100 cc. She was cured from pica after receiving iron intramuscularly. It can be assumed that the transfused blood had failed to correct the iron deficiency.

One of the most significant symptoms of iron deficiency in children is the color of the incisors which varies from pearly white to orange.

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Mycosis of the oral mucosa and 'denture stomatitis'

Werner Reither. *Deut. zahnärztl. Zschr.* 14:705-714 May 15, 1959

Except for their etiology, fungous infections such as mycoses differ little from bacterial infections. The close relationship between bacteria and fungi is apparent in the transitional forms connecting the two types of infections, and from the similarity of the pathologic changes and clinical manifestations induced by them.

A few fungous diseases are endogenous in origin. *Actinomyces bovis* is a normal anaerobic inhabitant of the oral cavity, and *Candida albicans* is a normal resident of the mouth and the gastrointestinal tract.

In instances in which the normal resistance of the host is reduced, endogenous infection by either fungus can develop. Mycosis of the oral mucosa is often preceded by tooth extraction or "denture stomatitis," and overgrowth of fungi in the course of antibiotic therapy may lead to the development of oral lesions which often are asymptomatic and, therefore, difficult to differentiate from those caused by ill-fitting dentures.

The classic treatment of the lesions caused by mycosis of the oral mucosa consists in application of a saturated solution of potassium iodide in initial doses of 15 drops three times daily. The dosage should be increased by one drop every day until the ultimate dosage of 40 drops three times daily is reached. This dosage should be maintained for at least three weeks beyond the time the clinical cure has been effected. Because some patients are intolerant of iodides, pantothenic acid, in the form of "Bepanthen" salve, has become the treatment method of choice at the Dental Clinic of the University of Munich for patients with mycosis of the oral mucosa. If the

condition does not respond to the effects of pantothenic acid, and the areas of the fungous infection are not too large, the lesions are excised and extensive curettage or cauterization is employed.

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Possible relations between moniliasis (candidiasis) and allergy

R. Kourilsky, P. Burtin and F. Monnier.
Bul. Soc. méd. Hôp. 75:120-125 June-Aug. 1959

Moniliasis is a rather common and comparatively mild mucocutaneous infection caused by *Candida albicans*.

This fungus resides normally on the mucous membrane, especially on the oral mucosa, and frequently can be cultured from the oral cavity of persons in good health. Infection of the mucous membranes, however, may give rise to thrush in the form of soft white patches on the cheeks, gingivae, tonsils and tongue. Although usually self-limited, moniliasis may become chronic and spread from the oral mucosa to other mucosal surfaces.

Septicemic infection occurs most commonly in children receiving antibiotic therapy.

In 750 patients treated for various allergies at the Medical Hospital in Paris, more than 33 per cent showed the characteristic symptoms of moniliasis. The patients, mainly men between 30 and 60 years old, came from urban and rural areas. The symptoms included allergic rhinitis, oral and facial eczemas, urticaria, dyshidrosis, angioneurotic edema (Quincke's disease), gingivitis, stomatitis, headache and a painful burning sensation in the oral cavity. This definite set of symptoms occurring together may be called the allergic syndrome of moniliasis.

The recommended treatment consists of nystatin administered orally in doses of 500,000 units three times a day. This treatment also prevents candidal pneumonia or septicemia.

In allergic persons, moniliasis is frequently difficult to recognize because *C. albicans* is a normal constituent of the oral flora and may appear in saliva in the absence of respiratory infection.

Dentists and physicians observing patients with hypersensitive reaction to an unknown allergen

may consider *C. albicans* as the possible sensitogen although in most instances no circulating antibodies will be found. Patch tests for this microorganism, however, are seldom satisfactory because it can be determined only after from 48 to 72 hours.

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Mortality experience among children with congenital malformations

Helen M. Wallace and David Sanders. *J. Pediat.* 54:801-808 June 1959

Of 629 deaths due to a congenital malformation reported in New York City in 1954, 252 (40 per cent) were attributed to heart disease, 160 (25 per cent) to central nervous system conditions, 94 (15 per cent) to gastrointestinal conditions, 32 (5 per cent) to conditions of the genitourinary system, 10 (2 per cent) to cleft palate, 36 (6 per cent) to multiple malformations, and 45 (7 per cent) to miscellaneous malformations.

Of the 629 deaths, 330 (52 per cent) occurred within the neonatal period, 204 (32 per cent) in the postneonatal period, 70 (11 per cent) in the preschool period, and 25 (4 per cent) in children of school age.

Of the deaths occurring after the first year of life, in 4 per cent the diagnosis was not made until autopsy; in 16 per cent of the deaths the diagnosis was not made until after the child's first birthday, and in 37 per cent of the deaths the diagnosis was not made until the postneonatal period of life. Eighty-five per cent of the children who died had no interim hospital care.

Of the 629 deaths, the authors were of the opinion that 30 (4 per cent) were preventable and that an additional 52 deaths (8.2 per cent) probably were preventable. Of the 30 deaths considered preventable, one half occurred in the postneonatal period and almost one third in the neonatal period. Of the 52 deaths considered probably preventable, almost one half occurred in the postneonatal period, one third in the neonatal period and one sixth in the preschool period.

The diagnoses leading to the best chance of preserving life are cleft palate, malformations of the gastrointestinal tract, and obstruction of the genitourinary tract. Factors playing a part in pre-

ventability include time of diagnosis and the grade of care at birth and death. The condition of the newborn infant should be appraised as soon after birth as possible.

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Atypical face pain

Joseph G. Rushton, Joseph A. Gibilisco and Norman P. Goldstein. *J.A.M.A.* 171:545-548 Oct. 3, 1959

The term "atypical face pain" has been chosen to refer to an ill-defined group of conditions known by such names as "atypical facial neuralgia," "ciliary neuralgia," "facial causalgia," "sympatheticalgia," "sphenopalatine neuralgia," and "vidian neuralgia." Atypical face pain does not refer to trigeminal neuralgia, glossopharyngeal neuralgia, postherpetic neuralgia, or to pains caused by obvious disease of the teeth, throat, nose, sinuses, eyes or ears. The term "atypical face pain" should be used as the name of a symptom in the same manner as such terms as "fever" and "convulsion" are used. Atypical face pains do not have a common cause. The designation should be used only when a definite diagnosis is not possible and with the realization that surgical treatment holds little promise of aiding these patients. Cautious conservative treatment and continued observation are the best means for care of patients with atypical face pain.

In order to learn more about the possibilities of diagnosis, etiology and treatment of atypical face pain, 100 patients initially given that diagnosis were seen at the Mayo Clinic in a period of 18 months. The pain suffered by these patients could be classified as (1) psychogenic, (2) organic or (3) indeterminate.

The group with psychogenic face pain consisted of 53 patients who suffered from depressive reactions, conversion hysteria or schizophrenia. Each complained primarily of face pain. The age at onset of the pain in the 46 women and 7 men varied from 12 to 70 years, the majority of patients being in the fourth and fifth decades of life. The duration of pain varied from 1 to 36 years. Of the 53 patients, 33 were unable to recognize any cause for their pain. The presumed

causes offered by the remaining 20 patients were as follows: dental operations, 11 patients; being struck in the face by husband, 3; husband's illness, "nervous breakdown," nasal operation, parotitis, infected ear, and operation on the trigeminal nerve, 1 each.

In the second group of 33 patients (14 men and 19 women) in whom the pain was classified as organic, the pain apparently resulted from a morbid anatomic change, such as neoplasm, or from obviously disturbed physiological function. These patients could be subdivided into five groups; namely, those with vasodilating face pain, dental disease, neuritis, neoplasms and miscellaneous conditions. The number of patients in each group was eight, eight, eight, three and six, respectively. For instance, in eight patients the face pain proved to be caused by previously unrecognized dental disease. In each instance, the pain was unusual, and objective evidence for dental disease was lacking during the early part of the illness. The pain was described by four patients as a constant ache in the face but not the teeth, and by four patients as a severe but intermittent ache. The pain was poorly localized; in no instance was it localized to the offending tooth until late in the course of the illness. In five of the eight patients, the final diagnosis was pulpitis, and the pain was relieved by extraction of the tooth. Three patients had causalgia of the mandibular nerve after dental extraction; all efforts failed to relieve the pain.

Fourteen patients (five men and nine women) were classified as having face pain of indeterminate etiology, largely because they failed to qualify for the other two groups. In more than half of these patients, the onset of pain was after the age of 50 years. There was no reliable evidence to indicate that the pain was psychogenic, or that the character of the pain suggested an organic cause.

In a patient with face pain, the first and most important step is to obtain a careful, detailed history. A careful physical examination should be made, since it may reveal a specific condition that will account for the pain. Often it is necessary to carry out dental or neurological studies, and examinations of the eyes, ears, nose, throat and sinuses. Many face pains are atypical.

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Anthropology

Mutilation of the teeth

P. Moortgat. *Actual odontostomat., Paris*
13:87-110 March-May 1959

Voluntary mutilation of the teeth appears to be a manifestation of primitive man's mentality whether these dental operations had been or are performed for ritual or esthetic purposes. Mutilations of the teeth or tooth groups have been found in human remains from the Neolithic period at such distant places as Algeria, Annam, England, Israel and Japan. In a series of Mesolithic human skulls, found in Israel, the female skulls showed lack of the lower incisors. In several prehistoric human skulls, a "pitchfork" mutilation with two or three prongs has been observed, and it has been demonstrated experimentally that these primitive dental operations could have been performed by the use of flint tools available to prehistoric man.

On a morphologic basis, the following classification of mutilation of teeth can be made:

I. Subtractive tooth mutilations.

- A. Total avulsion.
- B. Complete elimination of the crown.

C. Various methods of removing parts of the vestibular or proximal surfaces and of the free edges.

II. Additive tooth mutilations.

A. Inlays inserted for ritual or esthetic purposes; (1) circular inlays; (2) quadrangular inlays, and (3) linear inlays.

- B. Lacquering, dyeing or staining.

Mutilations of the teeth have been reported from almost all countries of the world. In regions where the practice does not seem to be current, prehistoric findings attest to its existence in the past.

Studies of mutilation of the teeth, however, seldom have included a description of the techniques applied, probably because these mutilations were performed in the absence of foreign observers.

Hammers and chisels have been used more frequently than files.

The most common operating procedure, still used in Tasmania, Papua and New Guinea, is as follows: the subject lies on his back and rests his head on the left thigh of the operator, who sits on the ground holding the chisel in the left hand and the hammer in the right. A piece of wood, inserted between the molars, keeps the mouth open. Repeated blows shape the tooth as desired. Protective coatings, applied after the operation, are used only if the tooth mutilation was performed by filing or grinding.

In certain primitive Australian tribes, mutilation of teeth occurs involuntarily. The subject is suddenly attacked from the rear, firmly held on the ground, and his upper central incisors are removed by blows. Sometimes, the subject is permitted to extract these teeth in his own way.

In an African tribe, tooth mutilation is preceded by application of hot banana skins to the gingival tissue.

In Mexico, besides the customary wearing down of the tooth surfaces by continuous rubbing, cavities were prepared by rotating an arrow to which a small metal cylinder was attached. The inlay, usually a precious stone, was kept in position by a thin layer of silicate powder.

The classic explanation for tooth mutilation is that it is an irrational act, practiced for ritual and esthetic reasons usually at the time the subject has reached puberty. Along with the often published theory of a practical purpose for these tooth mutilations, the classic explanation, which is rather a "posthumous justification," is no longer



1



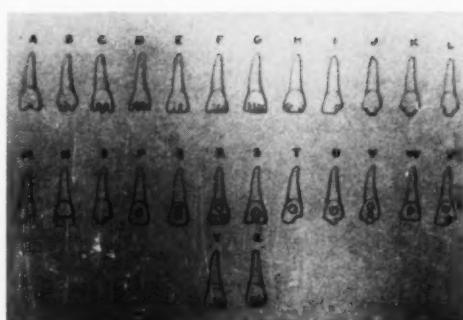
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3



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5



6

1 *Tooth mutilation in prehistoric skull found in Sahara desert.* 2 *"Pitchfork" tooth mutilation in Inca skull found in Bolivia.* 3 *Mutilation of upper teeth in neolithic skull (Aztec boy, probably 12 years old).* 4 *Forcible removal of upper incisors and "pitchfork" mutilation of lower anterior teeth in Quechuan skull found in Bolivia.* 5 *various types of tooth mutilations performed by pre-Colombian Indians.* 6 *Multiple tooth mutilation performed in Dahomey, French West Africa.*

credible. The customs and habits of primitive man have much deeper origins and defy all hypothetic explanations. In various Negroid tribes, the ancient primitive rites, originally possessing a religious meaning, have evolved to mere symbols hardly reminiscent of their previous inception.

A rigorous explanation of the genesis and the exact significance of mutilation of the teeth, or of any voluntary or involuntary mutilation of the human body, probably never can be given.

The universality of this phenomenon underlines the similarity of notions and beliefs in primitive man of the various tribes, and the role physiologic objectives play in the development of social behavior.

In primitive man, there were thousands of ways to treat a patient, to bury a corpse, to dance and to mutilate certain teeth, but these different ways were conditioned by the desire to act magically. Naked or dressed, hunting or farming, rich or poor, primitive man was and is everywhere the same, with identical fears, hopes and ideas. There was only one primitive civilization, and the diversity of behavior patterns does not preclude the existence of a fundamental uniformity.

Primitive societies, composed of equal members, were and are jealous of their realm and require, therefore, homage of the individual's body and soul. There never was room for an independent mind; if a member of the tribe revolted, he was disgraced, beaten up and banned from the primitive society. He had to disappear, often by a ritual assassination.

Later, as the primitive rites evolved to early cultural or religious ceremonies, the primary significance became lost, degenerating into a vestige thereby submitting to the routine of tradition.

Although the disappearance of mutilation of the teeth can be expected in the near future, the custom still is followed by various tribes in Africa and Australia.

It seems that the sociologic-magical explanation of tooth mutilation may be accepted to illustrate the origin of a strange and confusing custom of primitive man which remains with tattooing and other corporal mutilations a vestigial testimony to the initial designs of an organized human society.

Quai bir Hackeim, Papeete, Tahiti, French Oceania

The recurrent aphthous lesion

D. Lang, L. E. Francis and L. McCallum.
J. Canad. D.A. 25:767-771 Dec. 1959

To investigate the etiology of the recurrent aphthous lesion, fluid was aspirated from the blisterlike lesions in nine patients, and studied. The specimens produced pox on chick embryo chorioallantoic membranes. Histologic examination of the membranes revealed characteristic giant cells and the presence of vacuoles along the vessel walls, caused by lysis of the cytoplasm, resulting in total destruction of the walls due to large numbers of fusiform microorganisms. No fetid odor occurred from the heavily infected chick embryos. The microorganisms were capable of tolerating high concentrations of antibiotics. These bacteria can be grown successfully in the presence of living cells, but the authors so far have been unable to grow the bacteria extracellularly in a variety of appropriate media. No *Borrelia* were observed.

The antibody titers demonstrated were not suggestive of a herpes simplex infection. No herpes simplex virus was demonstrated in the infected chorioallantoic membrane by the complement fixation test.

The study suggests that the fusiform microorganism may be a causative agent in the recurrent aphthous lesion, a condition also referred to as "recurrent herpetic stomatitis," "recurrent aphthae" and "canker sores."

The recurrent aphthous lesion occurs in young adults and adults, often being associated with fatigue, colds, menstrual periods, fever or emotional disturbances. Although it was once held that the lesion may be caused by a virus, possibly the herpes simplex virus, recent investigations have not been able to demonstrate the inclusion bodies of the herpes virus or the increase of serum antibodies as can be seen in "primary herpetic stomatitis."

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**The influence of the refinement
of carbohydrates on their cariogenicity:
in vitro studies on crude and refined sugars
and animal experiments**

G. Neil Jenkins, Margaret G. Forster and R. L. Speirs. *Brit.D.J.* 106:362-374 June 2, 1959

Experiments were carried out to investigate quantitatively the statement of Osborn and others (1937) that unrefined sugars contain substances which protect the teeth against acid decalcification.

When calcium phosphate or whole teeth were incubated with saliva and either treacle or cane juice, considerably less calcium phosphate dissolved than in comparable mixtures containing pure sucrose. A small "protective factor" was observed with golden syrup. The protection of teeth was clearly seen both by visual inspection and by chemical analysis.

The removal of the calcium from cane juice and treacle reduced, but did not prevent, their "protective" action. Similar treatment of golden syrup did remove almost all its "protective" powers.

Various types of crystalline brown sugar and honey increased, rather than decreased, the amount of calcium phosphate dissolved during incubation. But crystalline brown sugar and honey exerted a "protective effect" on calcium phosphate dissolved in acetic acid buffer.

Treacle and cane juice are heavily buffered, and this property contributes to their effect on calcium phosphate solubility in incubated saliva, but cannot account for it completely. Other active constituents, possibly organic phosphates, also must be present.

Experiments with hamsters failed to show that brown flour or black treacle exerted any anticariogenic effect, contrary to the findings of some other workers.

As to the practical question of whether unrefined foods have any anticariogenic effect in man, there is little or no valid clinical evidence on this question for crude sugars and only circumstantial evidence for unrefined cereals. Animal experiments have been indecisive. Until controlled experiments on human subjects have been carried out, no conclusion can be reached.

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**Presence of a factor in the human saliva
which inhibits the hemagglutination and
affects the parotid virus, *Rabula inflans***

C. A. Romanzi and F. Filippi. *Gior.Batt.Immun.* 51:229-237 May 1959

The influence of human saliva on the agglutination of blood corpuscles and on the parotitis virus, *Rabula inflans*, was studied at the Hospital Maria Vittoria in Turin, Italy.

From 20 to 30 cc. of saliva was collected from normal adults whose stomachs were empty. The parotitis virus used in the study was of the Enders strain of *R. inflans* which at the moment of test had a hemagglutination value of 1:640 and an infective value of 10.46.

The tests proved that human saliva has a comparatively strong hemagglutination-inhibiting effect. The intensity of this effect, however, varied according to the subjects who had donated the saliva and the time the saliva was collected.

Storing saliva samples at a temperature of 4°C. decreased the hemagglutination-inhibiting activity. Other tests revealed that human saliva does not decrease significantly the infective power of *R. inflans* after inoculation of chicken embryos.

The treatment of erythrocytes with human saliva did not interfere with the agglutination of these corpuscles by *R. inflans*. It may be assumed that the factor which inhibits hemagglutination directly affects the virus and not the red corpuscles.

Heating the saliva specimens to a temperature of 56°C. for 30 minutes produced identical results.

Comparative studies of the hemagglutination-inhibiting activity of human saliva and of serum

obtained from the same subject revealed that the effects of saliva were not caused by the possible presence of serum antibodies within the saliva.

It can be concluded that human saliva contains a hemagglutination-inhibiting element, a factor which affects the parotitis virus directly by checking its hemagglutinative activity.

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The relationship between age and the fluorine content of human dentine and enamel: a regional survey

D. Jackson and S. M. Weidmann. *Brit.D.J.* 107:303-306 Nov. 17, 1959

The enamel and dentin of sound bicuspid teeth obtained from patients born and raised in Leeds, South Shields and West Hartlepool were analyzed for fluorine content. The present concentrations of fluorine (fluoride ion) in the water supplies to these regions are 0.5, 0.8 and 1.9 ppm, respectively.

At the time of eruption of the teeth, the concentration of fluorine in dentin was about twice that in enamel. There was a pronounced post-eruptive uptake of fluorine in both these tissues, the rate of uptake being greater in dentin than in enamel. This uptake was not continuous throughout life, equilibrium being reached in enamel at an age and at a fluorine level according to the fluorine present in the drinking water. Equilibrium of fluorine in dentin occurred at a fluorine level also dependent on the fluorine present in the drinking water, but at an age (about 55 years) independent of this factor. The maximum increase of fluorine in enamel was 100 per cent, and that in dentin from 200 to 300 per cent. This occurred in each region studied.

It is thought that the post-eruptive uptake of fluorine in enamel takes place via the medium of oral fluids, and that in dentin via the tissue fluids in the pulp chambers.

The results of this investigation suggest that the post-eruptive uptake of fluorine by enamel and dentin could be an important factor in caries prevention.

School of Dentistry, University of Leeds, Leeds, England

Phosphatase activity in whole and parotid saliva and its relationship to dental caries

Shoji Saito and Kozi Kizu. *J.D.Res.* 38:500-505 May-June 1959

The salivary phosphatase activity was measured in two groups of dental students. One group consisted of 20 students with no evidence of caries or with no more than three carious teeth. The other group consisted of 24 subjects, each with seven or more teeth with caries of the third degree; several of these students had undergone restorative dentistry procedures or extractions.

There was a significant difference in acid phosphatase activity of whole saliva collected from both groups. The students without caries showed a higher phosphatase activity than those with caries. The alkaline phosphatase activity of the whole saliva was not significantly different between the two groups. An analysis of the parotid saliva showed no correlation between the phosphatase activity and the presence of caries.

The difference in phosphatase activity between the students with no caries and those with caries was found only during the night and in the early morning. Although the influence of the time of day on phosphatase activity of saliva was pointed out by Lura (1947), earlier workers appear to have been unaware of the time of collection of the sample of saliva.

Tokyo Dental College, Tokyo, Japan

Effect of molybdenum on fluoride retention in the rat

George K. Stookey and Joseph C. Muhler. *Proc. Soc. Exper. Biol. & Med.* 101:379-380 June 1959

Adler (1957) has shown that molybdenum reduces the incidence of dental caries in the rat. His studies were prompted by the observation that the inhabitants of two communities in Hungary had a low incidence of dental caries although the water systems provided drinking water relatively poor in fluorine. Analysis of the water in both communities revealed that molybdenum was present in excess of that found in the water in other Hungarian communities in which the incidence of dental caries was higher.

Experiments were undertaken to learn more

about the relationship between skeletal retention of fluorine in the presence of molybdenum. Twenty four Sprague-Dawley rats were divided into four groups. Group 1 received water with 0.01 ppm fluorine. Group 2 received 50 ppm molybdenum (as ammonium molybdate) in the drinking water. Group 3 received 50 ppm fluorine in the water, and Group 4 received both 50 ppm molybdenum and 50 ppm fluorine in the water. All animals received the same low-fluorine (fluoride ion) stock corn diet. After 30 days the animals were sacrificed, the femur removed from each animal and the carcass prepared for fluorine analysis.

In the 30 days, the rats receiving 0.01 ppm fluorine in the drinking water and those receiving 50 ppm molybdenum gained an average of 87 Gm. in weight. Those which received 50 ppm fluorine gained 70 Gm., but those receiving both molybdenum and fluorine (fluoride ion) gained 98 Gm.

An analysis of the carcasses showed that 145 micrograms of fluorine were present in the animals of Group 1. Animals receiving 50 ppm of molybdenum had 212 micrograms of fluorine. Animals receiving 50 ppm of fluorine had 8,200 micrograms of fluorine in the carcass. Animals receiving both 50 ppm fluorine and 50 ppm molybdenum had 9,820 micrograms of fluorine. Similar ratios were evident when the femur was used as an index of skeletal fluorine retention.

The data suggest that molybdenum may act metabolically to increase the availability of the fluoride ion.

Department of Chemistry, Indiana University, Bloomington, Ind.

Selenium in teeth

Nutrit. Rev. 17:205-207 July 1959

Selenium first became of interest in nutrition because of toxic manifestations in grazing livestock occurring after the ingestion of certain plants with high concentrations (several thousand parts per million) of this element. More recent investigations have shown that trace amounts of the salts of selenium protect rats against dietary liver necrosis and chicks against exudative diathesis.

In numerous ways, there is an obvious parallel

between selenium and fluorine in the annals of nutritional history. Interest in selenium also has included studies of the teeth. A positive correlation has been observed between the incidence of dental caries and the level of urinary selenium excretion. No evidence of an increase in dental caries incidence was observed when sodium selenide was fed to a single group of rats at progressively increasing levels from 10 mg. to 30 mg. per kilogram of diet as the rats increased in age and weight. General systemic evidences of toxicity were observed, but no pathologic changes of the salivary glands were produced.

It is probable that any influence of selenium ingestion on susceptibility to caries in human beings may be a result of the incorporation of selenium in the inorganic crystalline lattice of the enamel and dentin during development. Hadjimarkos and Bonhorst (1959) found that the selenium values for various groups of permanent teeth of individuals in Portland, Ore., varied from 0.38 to 0.52 ppm for dentin, and from 0.43 to 1.60 ppm for enamel. No increase in selenium values with age was observed.

Relatively little is known of the metabolism of selenium in the animal body.

Nutrition Foundation, Inc., 99 Park Avenue, New York 16, N.Y.

A comparison of the increment of fluoride in enamel and the reduction in dental caries resulting from topical fluoride applications

I. Sundvall-Hagland, F. Brudevold, W. D. Armstrong, D. E. Gardner and F. A. Smith. *Arch. Oral Biol.* 1:74-79 Aug. 1959

Deciduous teeth which exfoliated during and after a topical fluoride application study were collected and analyzed for fluorine. In the study, one-half of the dentition of 107 children was treated four times with 2 per cent sodium fluoride. The untreated teeth, and the teeth of a similar group of children receiving no treatment, served as controls.

The caries reductions after one, two and three years were 19, 14 and 7.5 per cent when based on a comparison of treated and untreated teeth in the same mouth, and 34, 23 and 12 per cent when teeth of untreated children were used as controls.

Analysis of the exfoliated teeth showed that topical fluoride applications caused an increase of about 50 ppm in the fluorine concentrations of the outer portion of the enamel. There was no detectable decrease of fluorine from the treated enamel three to seven years after the treatment with sodium fluoride.

Penetration of fluorine into the bulk of the enamel is mediated through the water by hydration and not by diffusion through the crystals proper. The increased hydration of carious enamel will facilitate diffusion of fluorine, a fact verified by radioactive studies (Myers, Hamilton and Becks, 1952). But even when there is appreciable penetration of fluorine, the reaction involved remains essentially limited to the surface of the crystals. The fact that fluorine acts somewhat as a coating agent explains how topical fluoride applications produce only a slight increment in the concentration of fluorine and also how such small increments may provide protection against dental caries.

Eastman Dental Clinic, Stockholm, Sweden

The effect of pH on the fluoride inhibition of salivary acid production

G. N. Jenkins. *Arch. Oral Biol.* 1:33-41
Aug. 1959

The status of the antibacterial theory of fluorine (fluoride ion) action in caries is still uncertain. Although Isaac and others (1958) have published good evidence for the solubility theory, their results do not exclude the possibility that antibacterial effects may contribute to the action of fluorine.

In the present experiments, it is confirmed that concentrations of fluorine as low as 1 to 2 ppm have a detectable inhibitory effect on salivary acid production, and that concentrations of 5 to 10 ppm have a pronounced effect. The negative

results with these concentrations found by Lilienthal (1956) may have arisen from his use of a bicarbonate buffer at pH 6.8 as his incubating medium.

At a pH of 5.0, salivary organisms are more sensitive to fluorine than at neutrality, and at pH 5.0 concentrations of fluorine exceeding 6.0 ppm completely inhibit acid production, so that the pH rises during incubation with glucose. The addition of 230 ppm of calcium ions at pH 5.0 did not prevent the fluorine inhibition.

King's College, Newcastle upon Tyne, England

Caries-reducing effects of manganese

H. Berthold. *Zahnärztl. Praxis* 10:238
Oct. 15, 1959

The effectiveness of injections of aqueous potassium permanganate solutions for control of dental caries produced experimentally in Syrian golden hamsters was tested.

The subcutaneous injection of manganese reduced the caries incidence by about 15 per cent. It can be assumed that manganese decreases the solubility of human enamel in organic acids by a similar mechanism as demonstrated in experiments using fluorine, vanadate or molybdenum solutions.

Prevention of caries by modifying the presently used procedures is feasible, although it will require experimentation on a wider scale.

The reduction of carbohydrates in the diet may decrease the effect of attacking forces which produce or promote caries, whereas subcutaneous injection of potassium permanganate solution will increase the resistance of the hard tooth structures to caries. In none of the experimental animals were toxic or other adverse side effects observed when the manganese concentration of the solution was kept at 0.10 to 0.40 mg. per animal per week.

Landambulatorium, Ostritz-Görlitz, Germany

General

Resuscitation kit for the dental office

J. V. P. Chatwin and L. H. Edwards.
J. Canad. D. A. 25:489-493 Aug. 1959

A basic resuscitation kit (see illustration) for the dental office has been developed by the Dental Department of Kingston Military Hospital. The kit contains the drugs and equipment necessary to revive a patient or contain a dental emergency until additional medical help can be obtained. The kit was developed to combat the three main emergencies—syncope, convulsions and cardiorespiratory failure—which may be encountered in a dental practice.

Securing a good history from the patient is the most valuable precautionary measure available to the busy dentist. A history form has been devised which can be filled out in the waiting room. The patient records whether he has ever had heart trouble, rheumatic fever, diabetes, epilepsy, infectious diseases other than those common to childhood, and whether he has ever fainted;

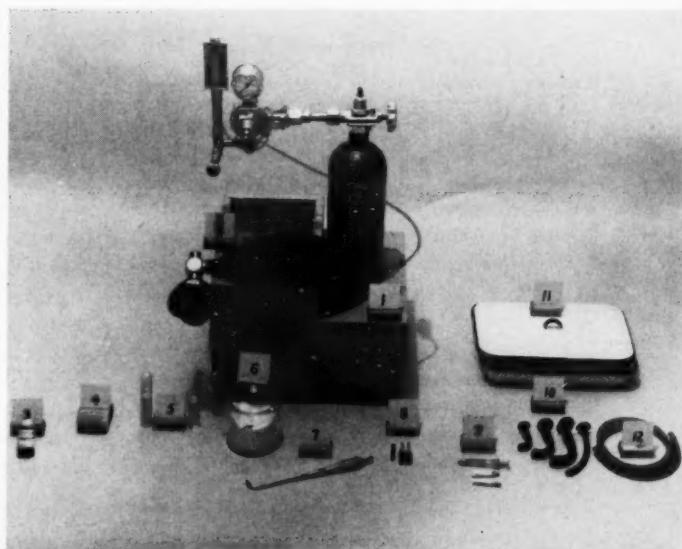
Resuscitation kit contains the following:
1 = oxygen cylinder, 2 = rebreathing bag, right-angle connector, and medium sized anesthetic face mask. 3 = nitroglycerine tablets. 4 = aromatic spirits of ammonia. 5 = 0.5 Gm. ampules of thiopental sodium and 20 cc. ampules of distilled water. 6 = alcohol swabs. 7 = suction apparatus for vomitus. 8 = ampules of phenylephrine hydrochloride. 9 = Luer-Lok syringes and needles. 10 = Guedel airways in assorted sizes. 11 = tray and lid. 12 = soft rubber tubing for tourniquet. Not shown is a sphygmomanometer

whether he has ever had abnormal bleeding after a dental extraction; whether he is sensitive to any particular medicine; whether he is taking any medicine now, and whether he is now under a physician's care.

Fainting usually is preceded by premonitory signs, such as pallor, profuse sweating, complaints of faintness, nausea, a rapid and weak pulse or a slow pulse. During this stage, the patient often can be revived by cold compresses on the head, aromatic spirits of ammonia to initiate the cough reflex, or by placing the patient's head between his knees with instructions to press up against the dentist's hand placed on the back of the patient's neck.

If consciousness is lost, the patient is tipped back in the chair so that his feet are higher than his head, and oxygen is supplied by mask. Labored breathing suggests an airway obstruction.

Convulsions in the dental office usually are ascribed to the inadvertent injection of the local anesthetic directly into the blood stream; however, the reaction probably is the result of increased or unusual sensitivity to the anesthetic, or acute cerebral anoxia. Convulsions develop with little warning, and usually are self-limiting. The patient is tipped back in the chair, and 2 cc. of 2.5 per cent thiopental sodium is injected. The needle is left in the vein to permit repeated similar doses 30 to 60 seconds apart; the medication smooths out the convulsions and protects both



the patient and the clinic's equipment from unnecessary harm.

Cardiorespiratory difficulties become evident and circulatory failure is imminent when the pulse is no longer detectable. A vasopressor agent should be injected with all possible haste. The drug of choice is phenylephrine hydrochloride, intravenously; the dosage is 0.5 cc. of the 0.2 mg. per cubic centimeter preparation which is marketed in a 2 cc. ampule. The injection can be repeated every one to five minutes, in a similar dosage or less, depending on the status of the patient and on his blood pressure. If the patient does not breathe, he is given pure oxygen. Airway obstruction, if present, must be corrected, usually by means of a Guedel oropharyngeal airway. If these aids to respiratory failure are not immediately available, mouth-to-mouth ventilation should be practiced.

Also included in the kit are a length of rubber tubing for use as a tourniquet, syringes and needles, and nitroglycerin tablets. The kit and treatment plan are built around the oxygen tank and mask, because of the vital role played by oxygen therapy in resuscitation. The rule is: Give oxygen early; no harm can result, and it may save a life. Drills are necessary to ensure that all members of the dental team know the contents of the kit and how to operate the oxygen apparatus. It is the dentist's moral and legal responsibility to have a simple, clear-cut plan to deal with any emergency which may arise in the dental office.

No. 7 Dental Clinic, Kingston Military Hospital, Barriefield, Ontario, Canada

Dentistry's manpower in continental Europe

W. Brenner. *Rev. Belge Sc. Dent.* 14:289-292
July-Sept. 1959

The problem of dental manpower in continental Europe, because of the national diversity, presents a picture which, to a certain degree, is different from that existing in Great Britain and the United States.

At present, the number of European countries where there exists a need for dentists is greater than the number of those countries where there appears to be a surplus of dentists. The present dentist-patient ratio in the West German Federal

Republic is 1:1,600; in Norway, 1:1,700; in Austria, 1:1,800; in Denmark, 1:2,000; in Switzerland, 1:2,000; in Sweden, 1:2,100, and in The Netherlands, 1:4,500.

The dental profession in many countries with a favorable dentist-patient ratio nonetheless emphasizes that a "shortage" of dentists exists. There are countries with an identical dentist-patient ratio; in one country this is called "shortage," and in the other "surplus." It can be assumed that the economic and social standards, the attitude of the general public and some other factors account for the different judgments.

Objective symptoms of a shortage of dentists are as follows:

1. When patients are hardly able to find a dentist who is willing to examine and treat them.
2. When dental schools encounter difficulties in recruiting faculty and staff members as well as dental students, a condition which obviously must result in the inability of dental schools to graduate the required numbers of young dentists.
3. When dental practitioners are overworked and spend long hours at their offices in spite of using the newest techniques.
4. When dental treatment is not available immediately because of long waiting lists.
5. When the dental profession is forced to urge the use of dental assistants and hygienists for performing dental procedures, and to request that the training period of dental students be reduced.
6. When the selling price of a private dental office is decreased whereas the salaries of the employees are increased.

Objective symptoms of a surplus of dentists are as follows:

1. When the social health insurance agencies refuse to admit all dentists to treatment of the insured people.
2. When the schedule of dental fees issued by such agencies contains comparatively low compensations for dental services rendered.
3. When the total income of practicing dentists, including dental specialists, drops to a low level.

In countries where a definite shortage of dentists exists, certain stimuli must be exerted to encourage recruitment of dental educators and students. The economic standards of the entire dental profession must be improved. Dentistry

can be practiced at only one level, the professional level. The standards of dental education, therefore, should not be lowered, and all programs which favor legalization of dental practice by any type of nondentist must be opposed not only by the dental profession but by all those interested in the people's dental and general health. As yet, all proposals of such kind have met with failure, and the dental profession must do its utmost to secure that similar proposals will have the same fate in the future.

In the majority of European countries the dental profession is of the opinion that prevention also belongs to the activities of dentists; this principal attitude is especially advocated in Austria, Belgium, France and Germany. The dental profession in The Netherlands and Switzerland, however, takes a less strict attitude on this question.

Weihburggasse 10-12, Vienna 1, Austria

Changing concepts of preventive dentistry

John Oppie McCall. *New York J. Den.* 29:277-279 Oct. 1959

Maynard K. Hine and Philip E. Blackerby, writing on preventive dentistry in the August-September 1958 issue of the *New York Journal of Dentistry*, praised the concept of preventive dentistry as an ideal, but failed to define clearly the term "preventive dentistry." Both interpret the term too broadly.

G. V. Black, in his concept of "extension for prevention," gave the first hint that any sort of prevention of caries might be within reach. D. D. Smith, in his proposals for monthly prophylactic treatment plus effective home care, provided hope for caries prevention and paved the way for the dental hygienist. Thaddeus P. Hyatt with his advocacy of prophylactic odontotomy—the opening and filling of susceptible fissures in the occlusal surfaces of molars and bicuspids with the objective of anticipating caries in those surfaces—brought the dentist a step closer to preventive dentistry. The fluoridation of communal water supplies is a cornerstone of preventive dentistry.

The objective of prevention in dentistry is the preservation of the teeth and surrounding tissues in a state of health throughout life. The program

includes improved nutrition, proper home care, fluoridation, oral prophylaxis and prophylactic odontotomy. Under most circumstances, these combined services will preserve the oral structures. Orthodontic treatment, when indicated, also plays an important role in the preventive program. Prosthetic dentistry is required only in instances in which the teeth are congenitally missing or have been lost through accident. The treatment of proximal caries, however, is a reparative, not a preventive, service. The services of the periodontist are therapeutic rather than preventive. Although the dental profession has every reason to look with pride on the achievements made in operative and prosthetic dentistry, they are not "preventive dentistry."

944 Park Avenue, New York, N. Y.

Objective pain sensation and subjective pain experience of dental patients

A. Jones and D. Remy. *Fortschr. Kief. Ges. Chir.* 5:8-15, 1959

In the average dental patient, pain appears as a more or less localized sensation of discomfort, distress and agony, varying in quality, resulting from the stimulation of specialized nerve endings within the oral cavity but not always identical with odontalgia (toothache).

In certain patients, prior to or during dental treatments, fulgurant, piercing and even referred pain may cause a disintegration of the attitude to life and a splitting of the personality into a spiritual (inner) and corporeal (bodily) being. Although every patient interprets his pain experience subjectively, all human beings share almost equally objective pain sensations triggered by definite body mechanisms in the nervous system. Subjectively, however, pain is as variable as human nature. The evaluation of dental patients with a low and a high pain threshold is a decisive diagnostic problem for the dental practitioner and the oral surgeon.

To judge subjective pain experience as an individual symptom, or to discriminate between organic, functional or psychic pain as a seemingly objective classification, is of limited value in dental practice. Although such a classification ap-

pears senseless to the patient, it may be necessary in directing therapeutic action. The dentist's aim must be to combat the pain sensation whatever its origin may be. The relief of pain may be obtained by drugs, anesthesia, neurosurgery, psychotherapy and also by hypnosis.

The increased susceptibility to pain in modern man is a result of innumerable external stresses causing an almost ever-present concealed or manifested irritability. The rapidly rising use of analgesics, narcotics, sedatives and hypnotics parallels this process.

Besides prescribing or administering these pain-relieving drugs, the dentist or oral surgeon has the task of guiding his patient psychologically with the aim of relieving tensions usually accompanied by fear and emotion, of helping him toward a balanced attitude even during the period of the most severe pain, and of preventing the disintegration of his personality.

Universitätskrankenhaus, Hamburg-Eppendorf, Germany

Problems of impaired speech and language

Wendell Johnson. *J.A.M.A.* 170:2102-2103
Aug. 22, 1959

The process of symbolization is the most distinctively human of man's bodily functions. The clinically recognized impairments of the symbolization process are primarily those of spoken language. Disorders of spoken language involve impaired phonation, speech sound articulation, fluency and rate, or symbolic representation, singly or in combination, whether associated with significant organic or physiological complications or emotional disturbances.

The organic or physiological conditions most often associated with speech problems are those related to hearing loss, cleft palate, laryngectomy, cerebral palsy or other types of neuromuscular impairment, brain damage, and retarded or limited development. Associated emotional reactions are more likely to be effects than causes of the speech disorder.

About 4 per cent of all children enrolled in the public and private elementary and secondary

schools of the United States have significant speech problems; this amounts to 1,600,000 children, of which about 1,000,000 have faults of articulation such as lisping, not associated with organic pathologic changes. About 280,000 school children stutter, 200,000 have impaired speech associated with hearing loss, 40,000 have voice problems, and about 20,000 have each of the following defects: fluency and rate problems, retarded speech development, speech difficulties related to cleft palate or cleft lip, and problems of speech and voice associated with cerebral palsy and other types of disturbed neuromuscular function. Incidence data for adults are limited. Probably there are 2,500,000 children and adults in the United States with relatively severe speech, voice or language impairments.

The problems presented by these 2,500,000 persons are both medical and nonmedical and are best managed through multidisciplinary cooperation. The medical specialists most often concerned are the otolaryngologists, neurologists, neurosurgeons, orthopedic surgeons, psychiatrists, pediatricians and general practitioners.

Nonmedical professions that have developed in this field are those of speech pathology and audiology. These groups function through the American Speech and Hearing Association (1001 Connecticut Ave. N.W., Washington 6, D.C.), which administers clinical certification for its members, publishes the *Journal of Speech and Hearing Disorders* and the *Journal of Speech and Hearing Research*, and seeks to improve the research and professional training programs and the educational and clinical services in its field. Two thirds of the 5,000 members hold graduate degrees, and some members are physicians. An estimated 1,000 to 1,200 graduates at all degree levels are being trained annually.

Other professions which contribute substantially to the effectiveness of services for persons with speech impairments are dentistry (particularly oral surgery, orthodontics and prosthodontics), education and clinical psychology.

Most speech correction is carried out in the public schools, primarily with the children in the early grades.

State University of Iowa, Iowa City, Iowa

Doctoral and Masters' dissertations

In this column each month are listed recent Doctoral and Masters' dissertations of dental interest, accepted by the dental schools or graduate schools in partial fulfillment for advanced degrees. Copies of many of these theses are available from the schools through interlibrary loan.

Operative and postoperative hemorrhage, a major oral surgery problem with six case histories. *Lorenz Frederick deJulien, Jr.* 1959. M.S. College of Physicians and Surgeons of San Francisco.

An investigation of the etiology and surgical management of radiation osteomyelitis of the mandible and maxilla. *Walter W. Shimasaki.* 1959. M.S. College of Physicians and Surgeons of San Francisco.

A clinical investigation of the strength requirements of amalgam and the influence of residual mercury upon this type of restoration. *Rafael Nadal.* 1959. M.S.D. Indiana University.

A study of the posture of the tongue in individuals with normal occlusion. *La Forest Dean Garner.* 1959. M.S.D. Indiana University.

Pretreatment of teeth with sodium fluoride prior to stannous fluoride application in the human. *Hashim Abdul-Ghaffr.* 1959. M.S.D. Indiana University.

Rat connective tissue reaction to implants of certain periodontal postoperative packs. *Charles Douglass Hall.* 1959. M.S.D. Indiana University.

Important aspects of tissue examination for the oral surgeon. *Arthur Williams.* 1959. M.S. New York University.

A study of gingivitis associated with pregnancy. *David Behrens.* 1958. M.S. New York University.

The effects of sialoadenectomy on the periodontal tissues of the Syrian hamster. *Om P. Gupta.* 1958. M.S. New York University.

Influence of bone chips on healing and regeneration of alveolar crestal bone in dogs. *Leonard Nevins.* 1958. M.S. New York University.

A clinical and histologic study of gingival changes in aging and arteriosclerosis. *Arthur Quart.* 1959. M.S. New York University.

An electromyographic and cephalometric radiographic investigation of the temporal and masseter muscles in individuals undergoing orthodontic treatment. *Jon. A. Jourdonnais.* 1959. M.S.D. Northwestern University.

A comparative study of pressure packs and astringent pressure packs in reducing the depth of periodontal pockets. *James L. Padgett.* 1959. M.S.D. Northwestern University.

A radiographic cephalometric and clinical study of certain occlusal mandibular movements in individuals with temporomandibular joint dysfunction. *Isaac J. Post.* 1959. M.S.D. Northwestern University.

A radiographic cephalometric investigation of the palatal maxillary structures: their form and the variability of the interpretation of the radiographic image. *Dean H. Hausrath.* 1959. M.S.D. Northwestern University.

A study of the cemental surface of human teeth. *Lambert A. Benson.* 1958. M.S. Ohio State University.

Proliferative capacities of the rat sulcus epithelium. *William A. Bruce.* 1958. M.S. Ohio State University.

Bone repair following experimentally produced defects. *Henry B. Mazorow.* 1959. M.S. Ohio State University.

Dentin-pulpal membrane. *Rudy Melfi.* 1959. M.S. Ohio State University.

Biometrical studies of posterior teeth in hominoids. *Sunder Jethanand Vazirani*. 1959. M.S. *University of Illinois*.

Movement of molar teeth in normal and hypophysectomized rats. *Bernard Arthur Yenne*. 1959. M.S. *University of Illinois*.

Histodifferentiation of oral epithelium in the adult mouse. *Herman Medak*. 1959. PH.D. *University of Illinois*.

An analysis of 319 cases of mandibular fractures. *Edmund H. Hagan*. 1959. M.S. *University of Michigan*.

A study of the structural, dimensional, and physical characteristics of root canal instruments. *Michael A. Heuer*. 1959. M.S. *University of Michigan*.

The reaction of the dental pulp of young, non-carious, permanent human teeth to ammoniacal silver nitrate. *Billy C. Best*. 1959. M.S.D. *University of Nebraska*.

A study of the pulp tissue of primary teeth and young permanent teeth. *Dean H. Gosselin*. 1959. M.S.D. *University of Nebraska*.

The prevalence of hypocalcification in recently erupted first permanent molars. *Frank H. Daniel*. 1958. M.S. *University of North Carolina*.

Clinical analysis of the mortality of teeth. *Fletcher Stuart Abbey*. 1959. M.S. *University of Pittsburgh*.

Incidence of torus palatinus in the newborn. *Charles Harold Moore*. 1959. M.S. *University of Pittsburgh*.

Zygosity determination using oriented lateral roentgenographic cephalometric headfilms. *Gene I. Campbell*. 1959. M.S. *University of Washington*.

A study of dental and skeletal profile changes of children undergoing orthodontic treatment. *Francis G. Jones*. 1959. M.S. *University of Washington*.

An electromyographic study of the right temporal muscle of monozygotic and dizygotic twins. *D. N. Allen*. 1957. M.S.D. *University of Toronto*.

A histological study of the effects of ascorbic acid deficiency on the teeth and periodontal tissues of guinea pigs. *A. M. Hunt*. 1957. M.S.D. *University of Toronto*.

Investigation of the ability of the vagus nerve to regenerate (Untersuchungen über die Regenerationsfähigkeit des Nervus Vagus). *Heinz Peusquens*. 1959. DR.MED.DENT. *University of Bonn, Germany*.

Influence of staphylococci antigenic seroreactions on listeriosis (Inwieweit beeinflusst Staphylokokken-Antigene Seroreaktionen auf Listeriose?). *Renate Beeck*. 1959. DR.MED.DENT. *University of Bonn, Germany*.

Hydrolytic changes of the protein molecules in serum and tissues in instances of facial and oral carcinoma, melanoma or melanosarcoma (Hydrolytische Serum- und Gewebsveränderungen beim Carcinom, Melanom oder Melano-Carcinom des Gesichtes oder des Mundes). *Erna Reinhard*. 1959. DR.MED.DENT. *University of Bonn, Germany*.

Statistical data on tooth extraction technics (Statistische Untersuchungen zur Technik der Zahnentfernung). *Kurt Raufiesen*. 1959. DR.MED.DENT. *University of Heidelberg, Germany*.

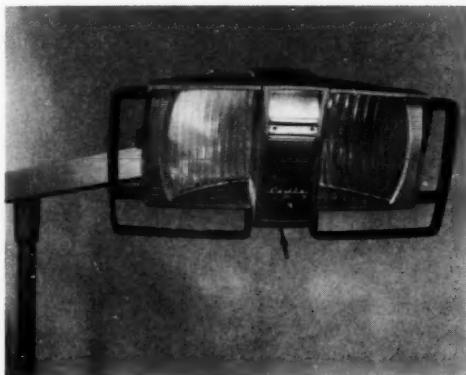
Influence of acquired causative factors in the development of malocclusion, demonstrated by orthodontic diagnosis (L'influsso dei fattori acquisiti nei vizi di conformazione dell'ortodonzia e diagnosi malocclusione). *N. Leggio*. 1959. DR.MED.DENT. *University of Milan, Italy*.

Intrincisal diastema (Sul diastema interciclico). *L. Dal Maso*. 1959. DR.MED.DENT. *University of Milan, Italy*.

Pathologic changes after premature extraction of deciduous teeth (Sulle conseguenze delle avulsioni precoci in gnato-ortopedia). *A. Facchetti*. 1959. DR.MED.DENT. *University of Milan, Italy*.

New equipment

The information reported here is obtained from manufacturers. Dental Abstracts does not assume responsibility for the accuracy of the information. The interested reader may direct his inquiry to the manufacturer.



The "AcuVision" dental light has a new reflector which projects only usable visible light into the operating field while transmitting the unwanted portion of the visible light and more than 90 per cent of the heat-producing infrared rays through the open back of the light head. The AcuVision light is said to be seven times cooler than unfiltered light of equal intensity. The long leverage arm can be actuated from a seated position, and the switch can be operated with the back of the hand. *Ritter Co., Inc., 400 West Ave., Rochester, N.Y.*

A new line of vacuum-fired, gold-pin, "Belray" characterized teeth incorporates suggestions of dentists and dental laboratories as regards calcification marks and fillings, gingival stains, irregular incisal edges and fluorescence. Forty-four anterior, 22 lower anterior and 14 posterior molds are available. For samples and descriptive literature, write *American Porcelain Co., 13945 Nolandale, La Puente, Calif.*



An all-transistor "Chief" intercommunication system designed to fit into the decor of the modern office has been introduced. The Chief is less than three inches high, and lies flat on the desk. Features include a monitoring signal, incoming call chime, external relay control for use in high noise level areas, and a reciprocal power supply for use where no electrical outlet is available. The unit is finished in chrome and charcoal gray. *Talk-A-Phone Co., 1512 S. Pulaski, Chicago, Ill.*

A new "Ceramco" no. 1 bridge gold with a Brinnell hardness of 140 is available for use with Ceramco porcelain on gold restorations. *Julius Aderer, Inc., 21-25 Forty-fourth Ave., Long Island City 1, N.Y.*

Five new, portable "Oxy-Lyfe" inhalator units are lightweight, easy to use, and provide oxygen for periods ranging from 30 to 150 minutes. Cylinders are available in three sizes. The face mask is designed for comfort. Each unit comes in a durable, luggage type of case. *Oxy-Lyfe Corp., 3232 Archer Ave., Chicago 8, Ill.*



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